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THE PATHOGENESIS OF CIRCULATORY FAILURE*

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NEW England physicians who are interested in disorders of the circulation may well be proud of their intellectual heritage. It was here that Henry P. Bowditch discovered one of the most fundamental properties of cardiac muscle and expressed it in his "all or none" law of contraction. From Boston emanated the first clear exposition of our present knowledge of the important underlying causes of cardiac disease. In New England the rapid advances made in the first decade of the present century in the understanding of the arrhythmias were applied, amplified and taught. Here the treatment of angina pectoris by nerve injections was popularized; the courageous surgical attack on chronic valvular disease was instituted; the medical recognition and the surgical treatment of obliterative pericarditis were extended; the importance of masked thyrotoxicosis as a removable cause of heart disease was recognized; the great value of digitalis in many patients with regular cardiac rhythm was successfully defended; the role of adrenalin and adrenalin-like substances in the control of the heart rate was demonstrated; the velocity of the blood flow in health and disease was measured; the syndrome of left ventricular failure was clarified; carotid sinus syncope was discovered; and complete ablation of the thyroid gland for cardiac invalidism was initiated. In Boston, young physicians from other parts of the country have been made "heart-conscious" and have been stimulated to continue the application of modern methods and rational concepts to their investigations, teaching and practice. The work still goes on, and one can confidently predict that contributions from this locality to the problems of circulatory disorders will be as significant in the future as in the past. In view of these facts, one experiences a peculiar sensation on coming to Boston to talk about the heart. One feels like the mountain visiting Mohammed, or Birnam Wood approaching Dunsinane. It seems unnatural and unorthodox but not unpleasant.

In any consideration of circulatory failure it is of importance that disturbances originating in the heart be clearly distinguished from those of peripheral origin, for these two groups of disorders differ from each other as regards the underlying physiologic alterations, the clinical picture produced, and the methods of treatment to be applied.

PERIPHERAL CIRCULATORY FAILURE

The clinical picture of peripheral circulatory failure (shock, collapse) is characterized by weakness as the chief subjective phenomenon, and by ashen pallor, cold clammy skin, tachycardia, weakness of the pulse, diminution in systolic pressure followed at a later stage by a decline in the diastolic pressure as well, and in certain instances by faintness of the heart sounds, which often resemble each other in quality. This symptom complex may be the result of several different mechanisms. The *hematogenic* type is due to a primary diminution in the circulating blood volume and is most clearly exemplified by acute hemorrhage. It is also observed in conditions of severe dehydration from vomiting, diarrhea or excessive sweating. Diminution in blood volume also plays an important rôle in the mechanism of traumatic shock (secondary shock) because of loss of blood and blood plasma from the blood stream into the injured areas. The *neurogenic* type of circulatory failure is brought about by influences which affect the blood vessels through the nervous system and is illustrated by simple fainting as well as by the syncope induced by carotid sinus pressure and by the effects of spinal anesthesia. In these conditions the blood volume may remain normal, but the blood pressure is reduced as a result of vascular dilatation. We also have the *vasogenic* type of peripheral circulatory failure, which is brought about by agents, such as histamine, which cause vascular dilatation by direct action on the vessels. The mechanism of certain other types of acute circulatory failure is as yet unknown. This is particularly true of the collapse associated with severe infections and that which accompanies peritonitis.

Regardless of the initiating agent, the fundamental mechanism in these various disorders of the peripheral circulation is a diminution in the venous pressure, decline in the output of the heart and inadequate blood supply to the tissues. In the interpretation of the mechanism of heart failure, it is important to remember that the clin-

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ical picture produced by insufficient blood supply to the tissues is the picture of shock or of collapse.

HEART FAILURE

There are two types of heart failure which may occur either singly or in combination. Acute cardiac collapse occurs in certain instances in which there is grave and usually sudden disturbance of myocardial function. The clinical syndrome is similar to that of peripheral circulatory failure except that the veins which are empty in the latter may be distended in the former. Examples of this type of heart failure may be seen in some of the following disorders: paroxysmal tachycardia, coronary thrombosis, diphtheritic myocarditis, complete heart block, effusion into the pericardium, and in more chronic form in persons with constrictive pericarditis. Sudden death occurring in persons with angina pectoris as a result of ventricular fibrillation or of cardiac standstill illustrates this type of heart failure appearing in its most dramatic and extreme form.

The term *congestive heart failure* should be reserved for a clinical syndrome characterized either by congestion in the pulmonary vascular bed (left-sided failure), accompanied by dyspnea, diminution in vital capacity, cough and râles in the lungs, or by engorgement of the systemic vascular bed (right-sided heart failure), associated with venous distention, enlargement of the liver, edema, albuminuria and cyanosis. (Of course the manifestations of pulmonary and systemic congestion may and often do occur together.) Concerning the pathogenesis of this symptom complex, two general concepts have been advanced. One of these, which has been widely accepted by the clinicians of the English speaking countries, attributes this syndrome to "forward failure", i.e., to diminished blood supply to the tissues as the result of an inadequate cardiac output. According to this concept, dyspnea must be ascribed to deficiency of blood flow to the centers in the brain, while edema, the other most striking clinical manifestation of the syndrome, is explained by an increase in capillary permeability dependent on deficiency of the peripheral blood supply. However, in recent years, convincing evidence against this hypothesis has been accumulated. It has been shown for instance that the picture produced by decline in the output of the heart is, as has been discussed, that of shock or collapse and not that of congestive heart failure. Furthermore, although many patients with the latter syndrome are found, when studied by modern methods, to have a diminution in the amount of blood pumped by the heart per minute, the degree of diminution is often slight and no greater than that seen in an occasional normal individual. It has also been shown that improvement from congestive heart failure is not associated with constant changes in the output of the heart.

Analysis of the arterial blood and of the venous blood returning from the brain of dyspneic patients has failed to reveal the alterations in blood gases which are postulated by the "forward-failure" idea. The fact that the edema fluid of patients with congestive heart failure is ordinarily poor in protein, indicates that diminished tissue circulation with consequent increase in capillary permeability is not the chief factor responsible for the dropsical tendency of patients with congestive heart failure. The evidence against the "forward-failure" hypothesis appears therefore to be conclusive.

The alternate theory, that of "backward failure", attributes the manifestations of congestive failure to a rise in pressure in the veins and capillaries in those areas which feed blood toward the failing side of the heart. This concept, which was hinted at by Corvisart and by Bertin, and was first clearly formulated by Hope, has been generally accepted by pathologists and by the Continental clinicians and is supported by much evidence. At the autopsy table congestion of the lungs is usually found in association with dilatation (which is the anatomic concomitant of failure) of the left side of the heart, while systemic congestion is ordinarily associated with dilatation of the right side of the heart. On the clinical side it has been shown that the edema of heart failure is regularly accompanied by an increase in the systemic venous pressure, this increase being transmitted back to the capillaries and being responsible for the greater transudation of fluid through their walls. Cardiac dyspnea is a complex symptom and many different elements play a rôle in its causation. However, the most important factor is congestion of the lungs, which can be recognized by the diminution in vital capacity, and which produces reflex stimulation of breathing through the afferent vagal fibers from the lungs. Dyspnea is therefore due in the main to back pressure from the left side of the heart just as edema is due to back pressure from the right side of the heart.

The chief objection which has been raised to the "back-pressure" hypothesis rests on the assumption that this concept necessarily implies regurgitation through stretched or diseased auriculoventricular valves, while the signs indicative of such regurgitation are absent in many of the patients. However, this objection is invalid for it is based on a misconception; back pressure may be the result of resistance to filling due to the accumulation in the ventricle of residual blood from dilatation.

It is of importance that one should attempt

to correlate clinical concepts of heart failure with the general principles of cardiac physiology which have been arrived at by experimentation. When heart failure has been studied under controlled conditions such as exist in the heart-lung preparation it has been found to be intimately associated with dilatation which is the heart's method of increasing its expenditure of energy. A healthy heart responds to effort by dilatation and this is accompanied by increased work. An impaired heart responds to injury or strain by dilatation in order to maintain its previous level of work. In the latter conditions the mechanical efficiency of the heart suffers and it is this inefficiency which is the cardinal physiologic change in heart failure. This has been demonstrated in the heart-lung preparation and also in intact animals in experiments in which the work of the heart and its oxygen consumption have been measured by indirect methods. Since dilatation is an almost constant finding in congestive heart failure in patients, it appears that here the cardinal physiologic change is an increase in the energy expended without an increase in the work performed. Indeed, the latter is usually decreased. Properly speaking, congestive heart failure is a matter of inefficiency rather than insufficiency of the myocardium. The evidence obtained from physiology, like that from pathology and clinical medicine, accords well with the general concept of backward failure.

RELATION OF CARDIAC HYPERTROPHY TO CARDIAC FAILURE

When the heart is subjected to chronic strain, or is the seat of extensive disease, the muscle fibers often hypertrophy. By analogy to skeletal muscle one would expect the hypertrophic fibers to be stronger. This is probably true, provided the hypertrophy does not proceed too far, but there seems no doubt that when sufficiently marked this initially compensatory process may be a disadvantage. Various explanations have been advanced for the tendency of hypertrophic hearts to fail. The idea that the blood flow may become inadequate because of the failure of the capillary bed to enlarge can scarcely be the whole story when one remembers that in the normal heart the volume of the coronary blood flow may readily increase five to ten fold under conditions of stress. Another explanation which has been offered concerns the rate of oxygen diffusion into the muscle fibers. When we recall that the flow of blood through the muscle of the left ventricle takes place mainly during diastole, and that the blood remains in the cardiac capillaries for only a fraction of a second, and that oxygen diffusion does not occur instantly but requires a definite interval of time, it would appear that either a marked augmentation of the heart rate with consequent diminution in the duration of diastole or a too-great increase in the distance to which oxygen must diffuse might interfere with the complete oxygenation of the central portions of the muscle fibers and hence with the recovery process. This general line of reasoning has served to explain why small animals with thin cardiac muscle fibers may have normal heart rates of 300 or more, why heart failure occurs in persons with structurally normal hearts during prolonged bouts of paroxysmal tachycardia, why moderate increase in rate may precipitate congestive failure in persons with slight cardiac hypertrophy, and why failure may exist at a normal heart rate in persons who have marked cardiac enlargement. These considerations are strengthened by calculations based on the known laws of oxygen diffusion which indicate that the oxygen tension of arterial blood is insufficient to cause oxygenation of the thickest fibers seen in hypertrophic hearts in the time available during diastole. It must be remembered that the rate of oxygen transported through tissue diminishes progressively in a way not unlike the rapid decline in the speed of a bullet passing through the animal body.

In conclusion: Failure of the circulation is of two general types which may coexist but usually occur separately. The forward type of circulatory failure usually involves primarily the peripheral vascular apparatus but is occasionally due to disorders of the heart. The clinical picture is that of collapse and is brought about by inadequacy of the tissue blood supply. The backward type of circulatory failure is dependent on chronic disease of the heart, which leads to a rise in venous pressure, either in the pulmonary or systemic vascular bed, or in both of these areas, and produces the clinical picture of congestive heart failure. It is of interest to recall that the greatest of all students of the cardiovascular system, William Harvey, 300 years ago arrived at the same conclusions which have been established by modern research. Harvey wrote: "If a live snake be cut open, the heart may be seen quietly and distinctly beating for more than an hour, moving like a worm and propelling blood when it contracts longitudinally, for it is oblong. It becomes pale in systole, the reverse in diastole, and almost all the other things we have mentioned as proving the truth may be clearly observed, for here all happens slower and more distinctly. This especially may be seen more clearly than the midday sun. The vena cava enters at the lower part of the heart, the artery leaves at the upper. Now, pinching off the vena cava with a forceps or between finger and thumb, the course of blood being intercepted some distance below the heart, you will see that the space between the finger and the heart is drained at once, the

blood being emptied by the heart beat. At the same time the heart becomes much paler even in distention from lack of blood, and beats more slowly, so that it seems to be dying. Immediately on releasing the vein, the color and size of the heart return to normal.

"On the other hand, leaving the vein alone, if you ligate or compress the artery a little distance above the heart, you will see the space between the compression and the heart, and the latter also, became greatly distended and very turgid, of a purple or livid color, and, choked by the blood, it will seem to suffocate. On removing the block, the normal color, size, and pulse return.

"This is evidence of two kinds of death, failure from a lack, and suffocation from excess. In these examples of both, one may find proof before his eyes of the truth spoken about the heart."

The Massachusetts Medical Society

SECTION OF RADIOLOGY AND PHYSIOTHERAPY

Municipal Auditorium, Springfield, Monday, June 8, 1936

PRESIDING:
Dr. Philip H. Cook, Worcester, Chairman.
Dr. William G. Curtis, Wollaston, Secretary.

CHAIRMAN COOK: I would like to announce that the program today has been made up with special reference to the general practitioner. We wish to enhance the understanding that exists between the general practitioner and the specialist to whom he sends his work. In times past there may have been some misunderstandings, and we would like to straighten those out as far as we can. It seemed best under those circumstances not to have a formal discussion after these papers, with one exception, but to have question periods, and consequently we will ask anybody in the audience who desires to ask questions to do so, and I hope you will all feel free to question the speakers. The first paper on this program is "The Limitations of the Roentgen Method of Diagnosis," by Dr. Harvey W. Van Allen of Springfield.

THE LIMITATIONS OF THE ROENTGEN METHOD OF DIAGNOSIS*

BY HARVEY W. VAN ALLEN, M.D.†

PROBABLY not more than half of the audience here remember the advent of the x-ray and not a quarter of those present were in medical practice at that time. It is interesting to have been connected with this specialty since its earliest days,—a period in which x-rays were looked upon as a very questionable aid in any diagnostic procedure and almost outside the realm of legitimate medicine as a form of treatment. In those early days we congratulated ourselves that "everything was working well" when we got a picture of a hand in one minute and a hip, if not too large, in ten minutes. At best, however, they were only silhouettes, showing no bone detail and a fracture, if present, was detected only by an irregularity in the contour and not by seeing a line of fracture.

The first hospital x-ray apparatus in Springfield was presented by a patient of mine, and it was with the greatest difficulty that a location was found for it. None of the departments wanted to give the apparatus room. Finally it was electrically connected in an abandoned linen closet in the operating wing. We were not expected to do more than confirm the surgeons' clinical diagnosis of fracture or the presence or absence of a large, x-ray opaque, foreign body. When there was a difference of opinion the surgeon settled the matter by assuming he was correct. For example, a little old cobbler shot himself in the mid-chest. The large wound entrance was there and no wound of exit. The x-ray failed to locate the bullet. This was not looked upon as too remarkable, but as additional proof of the unreliability of the new method. The bullet must be in the chest; witness the wound of entrance and none of exit. It was only when the patient was dismissed from the hospital as a rather good recovery from such a serious injury that the bullet was found in his shoe, having struck the sternum, bounced back into his clothing, to find a resting place in his shoe and there to remain until he was dressed in street clothing again.

From these early days the usefulness of the x-ray has rapidly advanced,—largely by increased electrical, photographic and mechanical improvement, until now there is no specialty which serves so many branches of medicine as this application of the discovery of Professor

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Roentgen. The ideas of most of the early workers were passed from one to another. Publication in books was far too slow and even ideas expressed in articles in the journals were often modified before publication. It was my good fortune to see Reider in Munich use bismuth to outline the stomach and the Frenchman Forestier visualize the bronchial tree with lipiodol before I had seen any published statements of these demonstrations.

Such rapid advances in the use of x-ray have changed incredulity into a belief, which at times goes beyond the physical laws governing this form of energy. One cannot blame the public for requesting an x-ray to show the cause of pain or for "wanting an x-ray all over" to see if their condition is good. But it shows how far belief has gone beyond the facts when recently a successful physician in a neighboring city brought to me a patient much out of breath and somewhat cyanotic, saying he knew she had valvular heart disease but wanted me to use the x-ray to see just how badly the valves were affected. Or, in another case a physician had been told by an aurist that the little chain of bones in the middle ear of a patient had been destroyed and he wanted a picture to show the patient the exact condition of these bones,—as it were to prove the case.

The purpose of this paper is to call attention to a few of the things expected at times of the x-ray that it will not do.

We must remember the x-ray is a form of energy governed by physical rules that never vary. The resulting x-ray varies in quality uniformly as certain component factors are changed in its production. Voltage, time, distance, and intervening substances (called filters) change the result, but with the same rearrangement the same results can be reproduced again. I am submitting the fact to you that x-rays are constant and the results will be constant. It is the patients that vary and the person interpreting the plates does not always realize this.

No changes can be detected, for example, in bone disease until alterations have taken place either in the structure or chemical constituents or of the contents of the bone cells. An example of this is early osteomyelitis. The patient is ill, with fever and pain in a single extremity and still a negative report must be given from any early radiograph taken. No bone changes have occurred and none will occur in some cases for a few days, after which the radiograph will show such extensive disease that it seems too bad the oncoming changes could not have been at least suspected in the original examination.

In the same way most gall stones cannot be seen in the plain plate as the atomic weight of the stone so closely resembles that of the surrounding bile. Even the use of various preparations to be secreted with the bile to change the weight of this fluid leaves a good 10 per cent undiscovered. In my belief the function of the gallbladder is in most cases, when not accompanied by severe pain, more important than knowing of the presence or absence of stones. I think in these cases, as well as in gastrointestinal cases, we can learn much from the attitude of the practitioner toward the roentgenologist in Europe. The American's proverbial haste is present in our work here. In Europe it is not unusual to have a second or third confirmatory examination made before final action is taken. This is done without reflection on the x-ray examination, as the inconstant factor of the patient is always recognized. Functions vary and it is only the constant defect that should be considered disease. While it is well known that twenty-four hours are required for a complete gastrointestinal examination, the referring physician will often call up within a couple of hours after the beginning of the examination and want to know what was found in the intestines as well as in the stomach. The patient has been ill for months and the x-ray diagnosis is supposed to be available in two hours! Again, let me ask for more time, more study of the case, more re-examination without reflection on the roentgenologist and with material benefit to patients by producing nearer 100 per cent correct diagnoses. It should always be kept in mind that the patient is the only one to be considered. If a re-examination will change possibility into probability and even into certainty, thus saving an expensive and to a degree dangerous exploratory operation, let the referring surgeon uphold us in our demands for more accuracy even at a time loss.

In lung examinations, both stereoscopic films and fluoroscope should be used. Asthma, until it has produced definite secondary changes, goes of course undetected. Without lipiodol bronchiectasis can only be definitely diagnosed when the pockets are fluid-filled. It is manifest that at times these are too nearly empty to cast characteristic shadows. If there is objection to the use of shadow-casting substances, a repeated examination may clear a doubtful diagnosis. The failure to find a small encapsulated empyema is often not the fault of the diagnosis or of localization. It is difficult for the surgeon to place the needle-point exactly, and some pocket walls are so tough that the tissue is pushed ahead of the needle, which then does not enter the cavity. I recall a case in which the tenth definite attempt was made covering several days before the fluid was found, although I had never once changed my location of the area.

The physician and roentgenologist should know the developmental status of the bones and

surrounding cavities. Cartilage does not in the usual way cast x-ray shadows, hence requests for diagnosis of fractures of the costal cartilages, semilunar cartilages of the knee and so forth should not be made. Fracture of the wrist of the small infant must be left to the surgeon. The time of the development of the nasal accessory sinuses varies somewhat but when a demonstration is requested before the average time of the development of the sinuses the opinion expressed should be most guarded. I recall an evening emergency case of frontal sinus trouble taken by my technician in my absence and diagnosed by the able attending physician as fluid-filled, as the sinuses did not show. The parents and child were on the sleeper awaiting departure for New York to a "Herr Professor" when I, returning from the theater, saw the plates, inquired the patient's age and, as it was such that the frontals were not formed yet, the trip was hastily abandoned and the case recovered without operation.

In speaking of children, the diagnosis of mastoid disease is difficult, as many times both sides are affected and we lose the advantage of comparison. However, we have recently been at quite an advantage in another way as our new machines enable us to take instantaneous films and thus overcome one of our greatest difficulties of obtaining immobility with the child lying on a tender ear.

There is often a little dissatisfaction shown by the referring physician when a negative report is returned. It is more difficult to produce films on which negative reports can be made with certainty than positive reports. A very poor plate may show a fracture but to say there is no fracture, even of an obscure type, the film must be excellent. So, for example, the negative report as to gallbladder shadow in the Graham test is of the greatest value as an indication of disease, but the film, to make such a diagnosis, must be capable of showing the most delicate shadow. We must have some definite rule that such a plate, to pass our criticism, must show clearly such permanent things as the edge of the psoas muscle and the border of the liver.

It is difficult at times not to put too much significance upon positive findings. There are many defects detectable by x-ray that are not the cause of the symptoms complained of. How often can hypertrophic deposits be seen on the spine of men over fifty with no symptoms, but if the man has backache, say from a kinked ureter, do we attribute the pain to the demonstrated arthritis and not question the undemonstrated ureter?

This leads me to introduce another discussed question:—"Should the roentgenologist have the history of the case?" The argument against having him know the past condition of the patient is that he will read this knowledge into the diagnosis, though if he does know he will be better able to employ the indicated technic and decide what plates to take. I am strongly of the opinion that the history should be known to the roentgenologist so that he may use the best technic for the particular lesion. Future re-examination can be more effective for diagnosis if films are carefully preserved for comparison. This is the duty of the roentgenologist. It has been long since decided legally, as well as by good roentgenologic practice, that the films are the permanent property of the roentgenologist, and the patient or his physician is only entitled to our report on a study of the plates themselves in the laboratory. Courtesy and good judgment sometimes make other practice advisable, but the films cannot be demanded.

A word as to treatment: X-ray as a remedy has now made for itself a very staple and accurate place. Gone are the days when an exposure to the ray is made with no thought of the voltage, distance or area to be covered. Proper technic now demands that every measurement should be adjusted as carefully as the pharmacist fills a carefully written prescription. The wrong use of the ray can be as serious as the wrong use of the surgeon's knife. This is true in a negative as well as a positive way. The roentgenologist who, through fear of a burn or lack of knowledge of his machine, gives too small a dose to be "safe" is as bad as the surgeon who fails to carry his operation far enough to reach the disease. We do not dictate to the surgeon just what method he shall adopt in his operating room, and it is equally absurd for a surgeon or medical man to indicate the kind of x-ray or the number of treatments required. The surgeon who refers a patient for postoperative radiation, asking us to give it "a couple of shines", not only belittles himself for requesting such a slipshod aid but makes it almost impossible to get the patient to look upon our efforts as a life-saving, serious matter. Again, I have had patients advised by the surgeon to discontinue deep therapy because in some it produces nausea. The fact that we are treating a serious disease, without other remedial resources, should make a simple discomfort of minor importance. We are trying to save a life. The surgeon does not abandon his operation because the ether causes nausea. I am asking for reference of treatment cases with no strings attached but with a confidence that a properly prepared roentgenologist will apply a powerful and potent remedy with the same thought and skill in his specialty that is used in surgery or medicine.

In this simple way I have tried to emphasize

the need of considering the limitations of x-ray to the physical laws in roentgenology; making a plea for repeated examinations to avoid errors due to idiosyncrasy, claiming that haste is an American characteristic often unnecessary and often causing avoidable errors; asking that details of radiological treatment be left to the radiologist in order that this effective weapon against disease may produce its greatest good.

CHAIRMAN COOK: Are there any questions for Dr. Van Allen? I had hoped this would bring forth considerable discussion from the floor. If there are no questions we will proceed to the second paper, which is "Vascular Nevi and Their Treatment" by Dr. J. Harper Blaisdell, of Boston.

VASCULAR NEVI AND THEIR TREATMENT*

BY J. HARPER BLAISDELL, M.D.†

THE baby is indeed fortunate whose parents can be assured at the end of its first six weeks of life that it is free from any of the many kinds of birthmarks to which the human race is prone. In the volume of Dermatology and Syphilology in the Practitioner's Library of Medicine and Surgery published by Appleton a month ago, Traub classifies nevi into forty-one different types, which may be grouped into six main divisions; vascular, pigmentary, verrucous, hairy, glandular and systematized. Most of these abnormalities of the skin are either present at birth or develop shortly afterwards. This paper discusses from the viewpoint of practical treatment the handling of the vascular division of nevi.

As the name implies, these nevi are caused by an abnormal overgrowth of the blood vessels which vary in size from a tiny pin-point capillary loop to the tremendous cavernous lesions involving both venous and arterial systems and covering many square inches of the cutaneous and mucous surfaces.

The simplest nevus is the so-called telangiectasia nuchae or flat vascular nevus, sometimes called nevus simplex. This usually appears as a very faint staining of the skin of the forehead or the nape of the neck. The capillary overgrowth may be so slight that the pinkness of the skin becomes apparent only when the child cries. It is estimated that one third of all new born babies show this lesion in some degree, but in the majority of cases it disappears completely in the first few weeks of life. In those cases in which it persists into adult life, it is so inconspicuous that its possessors are usually unaware of its presence. Obviously in this type, treatment of any sort is uncalled for and if any form of therapy were used the end-result would be more conspicuous than the original birthmark.

The nevus araneus or spider nevus is a lesion the size of a pin-point or pin-head, and is caused by the overgrowth of a capillary loop. It is often accompanied by an encircling areola of tiny blood vessels from which the name spider nevus arises. This type of lesion appears at any time from infancy to adult life. When it occurs during the first few weeks it is probably a true congenital defect and is the type of lesion from which the larger, elevated nevi develop. It is my opinion that when this type of lesion does not occur until puberty or adult life it is not a nevus at all, but a simple blood-vessel tumor caused by trivial localized trauma, such as shaving, picking at an acne lesion or mosquito bites.

The treatment of this lesion, no matter at what age it occurs, is simple and effective. The central blood vessel is pierced by a needle and the capillary loop destroyed by electrolysis or by the electrocoagulation of a monopolar current. In actual practice it is easier to spray the central vessel with the small brush-like spark of the monopolar current before the loop is punctured by the point of the needle. With this technic, a persistent and embarrassing oozing from the blood vessel can be avoided and the time of electrocoagulation much shortened.

The nevus flammeus, or port-wine mark is familiar to us all. It appears at birth or shortly afterwards on the face or more rarely on other parts of the body. In size it varies from a tiny lesion to a mark covering half the surface of the face for instance. Its color ranges from a light red to a deep reddish purple. The surface of the skin is smooth and nonelevated. This lesion will persist throughout life and practically never disappears spontaneously.

Generally speaking, treatment of a port-wine mark gives a result which is unsatisfactory both to the patient and the physician. This is because it is impossible to destroy the capillary overgrowth without producing a scar which is more conspicuous than the original birthmark. As a practical matter the application to the smooth, uniformly colored surface of this lesion of radium, carbon dioxide snow or the Kromayer water-cooled lamp cannot be done without occasional overlapping of the treated areas. This irregularity of dosage produces a checkerboard-like scarring, vastly more conspicuous than the original mark. In the darker colored lesions the capillary plexus

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is so deeply seated that if electrocoagulation is used vigorously enough to destroy it, the end-result is as unsightly as when radium or carbon dioxide snow is used.

During the past few years some improvement of these lesions has been noted by a few dermatologists who have employed the air-cooled mercury quartz lamp. The normal skin surrounding the nevus is carefully screened and the ultraviolet light applied in sufficient dosage to produce marked erythema and vesiculation. The resulting dermatitis is treated in the same way that any sunburn is handled, and succeeding treatments take place at intervals of three or four weeks. Four or more treatments are necessary to secure the maximum of improvement. If the majority of the capillary loops are sufficiently close to the surface of the skin, this wholesale but safe cauterization produces enough destruction to insure considerable lightening of the area without resulting in atrophic scarring of the skin.

The nevus vasculosus, with its numerous aliases of angioma, hemangioma, nevus sanguineus, strawberry mark and raspberry mark, is the commonest type with which we have to deal. It occurs frequently on the face, but may appear on any part of the body. In size it varies from a lesion the size of a pin-head to one covering many square inches of surface. The same individual may present several lesions of varying size on different parts of the body and oftentimes a single large lesion is surrounded by a spattering of smaller ones. The object of treatment is to transform a conspicuous, elevated, reddish-purple mark into a comparatively inconspicuous flesh-colored flat scar. In the more superficial lesions the resulting skin surface will be practically normal in appearance, but this happy result cannot be expected, nor should it be promised in the case of the large dark lesions. Electrocoagulation by the monopolar current produces excellent results with a minimum of scarring in either the single small lesions or the satellite variety.

In the early days of this century the method of choice was destruction by liquid air, but carbon dioxide snow soon supplanted it because of the advantages of cheapness, accuracy of application and the ease of the variation of dosage. Carbon dioxide snow in turn has been supplanted by radium, which today is probably more commonly used than any other agency.

Carbon dioxide snow removes the nevus by a nonselective mass destruction of the surface skin and the underlying plexus of blood vessels. The frozen area sloughs out and the destroyed tissue is replaced by a scar. The more elevated lesions may require several applications of the snow to reduce them to the plane of the normal skin, but once this level is approached, extreme care must be used to produce a minimum of slough in order that the final scar may not become depressed and because of this become more conspicuous. A better cosmetic result is obtained by having, as the end-result, a slightly reddened scar, level with the skin, than a completely white scar considerably depressed below its surface. All of this requires a skill of application and a sense of timing of dosage which only experience can teach. It is essential that the snow crayon should be shaped to the size of small lesions and under no conditions should its edges project over the margin of the nevus on to the normal skin. An overlapping of the treated areas produces irregular destruction of the nevus with a resulting unsightly mottling of the scar. The sloughing of the tissue is in direct proportion to the pressure and the length of time used. It is well to develop a sense of uniform pressure during the application and govern the dose by the time element. The average time of application is thirty seconds; fifteen seconds giving a light reaction and sixty seconds being the limit of safety, to be used only on a thick, elevated birthmark.

Radium has been a popular method of treatment for many years and in skilled hands is capable of giving excellent results. Its use is based upon the principle that the endothelial cells lining the blood vessels are sensitive to radiation. This sensitivity is in proportion to the age of the child so that the amount of radiation necessary to obliterate a nevus in a year old baby would have to be greatly increased to obtain the same result in a child of 6 or 8 years. It is truly impossible to lay down dogmatic rules for the application of radium. Every case must be individualized depending upon the location of the nevus, the size of the lesion with reference to its elevation and its depth and the amount of radium and the type of applicator available. There are, however, certain principles upon which all dermatologists are agreed. In using radium plaques the edges of the applicators should not extend over on to the normal skin and in treating a surface larger than the area of the applicator, care must be taken that the edges of the treated areas do not overlap. It is a generally accepted principle today that a suberythema dose should always be given. Obviously, the deeper the lesion the greater is the amount of radiation necessary to cause resolution and as the amount of radiation increases, so must the amount of screening increase in order to provide the necessary protection. For example, in a thin nevus, 2 mm. in depth, a half strength applicator with a screening of 0.6 mm. of aluminum may be used for thirty minutes. Unless the lesion is growing rapidly no treatment is necessary for a month, and the third and fourth treatments may follow at intervals of two months. As the

lesions increase in depth, the amount of screening is increased and the time of treatment lengthened so that the soft beta rays are completely screened off and only a mixture of hard beta and gamma rays is penetrating to the base of the birthmark. In the deepest types it is advantageous to use radium in tubes to the amount of 25 to 100 milligrams. Under these conditions the radium is screened by silver and brass and the tubes are elevated above the surface of the skin from 1 to 2 centimeters. Depending upon the amount of screening and the distance from the surface of the skin, the time of application may extend for several hours. As in the case of using plaque applicators, care must be taken that the treated areas do not overlap.

The cavernous angioma is simply an enlarged form of the nevus vasculosus. In this type the nevus is composed of greatly enlarged blood vessels which extend deeply into the subcutaneous tissues. Arteries, veins and capillaries make up the blue or black mass which may be of tremendous size and horribly disfiguring. Carbon dioxide snow does not give particularly good results. The depth of the blood vessel enlargement is so great that the mechanical removal by sloughing ends in a scar that is far from pleasing from a cosmetic viewpoint. In this field radium is of the greatest help and the sooner it is applied the better. As the child grows older the endothelial lining of the blood vessels becomes progressively less radium-sensitive and the original angiomatous mass becomes more and more partitioned off by fibrous connective tissue. Gamma radiation from a 50 or a 100 milligram tube of radium is used. Screened by brass and silver and a distance from the surface of the skin of one centimeter, each one inch square area may receive safely a dose of 100 to 200 milligram hours. Under such conditions no erythema of the skin will result and the second treatment can be given after an interval of two months. Subsequent treatments should take place at intervals of three to six months.

Surgical removal has a definite place in the treatment of nevi and one that is too little considered by either the dermatologist or the surgeon. The risk of uncontrollable hemorrhage from operative procedure is small, but its possibility acts as a distinct deterrent to skilled and courageous surgeons. It is a prompt and satisfactory method of removing isolated lesions on the body. A linear scar on the legs, arms or body of a boy, for instance, will be quite as satisfactory to all concerned as the more lengthy and more expensive removal by radium.

In theory, radium appears to be an ideally specific treatment. In actual practice, however, it is quite a different matter. The anxious parents demanding action and quick results; the squirming, crying baby; the difficulties of firm, even application to the irregular contours about the eyes, ears, nose and lips; the trouble of adapting the rigid, square outlines of the applicators to the irregularly rounded edges of the lesions; the necessity of guarding against overlapping of the treated areas; the ease of mistaken judgment in screening, resulting in unsightly and potentially dangerous scars with atrophy and telangiectasia and possible malignant changes in the years to come; all combine to make the pathway of birthmark removal by radium far from an easy one. It is pertinent to record that the Children's Hospital of Boston has never swerved from the use of carbon-dioxide snow throughout these years of radium popularity and it is still the opinion of the surgical staff that the results are equal to, if not generally better, than those obtained by any other method. After many years of experience with radium, my own opinion is that radium should be restricted to selected cases and that carbon dioxide snow is the safer and more satisfactory remedy for general use.

Spontaneous resolution frequently occurs in the nevi of the elevated type. When this is accompanied by ulceration, as often happens in the deeply seated cavernous type, the resulting scar is fully as disfiguring, if not more so, than that produced by skillful treatment. The resolution of such a lesion is rarely complete, and tag ends of nevoid tissue frequently remain at the outer edges of the original lesion. It is possible for the smaller and less elevated nevi to disappear, leaving an unblemished skin. Some go so far as to state that practically all of the elevated types of nevi will disappear during the early years of childhood, and, for that reason, recommend that no treatment be given unless the particular lesion is increasing in size during infancy. This phenomenon is entirely contrary to my own experience and, during almost any walk along our streets, birthmarks will be seen whose unsightly appearance has been endured for many years.

All authorities agree that in many cases, if not a majority, vascular nevi are not present at birth, but make their appearance in the first few weeks of life. Repeatedly, mothers have told me that the lesions, which at the time of coming for treatment have grown to a half inch or even to several inches in diameter, were first noticed in the early weeks as one or more red spots the size of a pinhead. Treated during this period the tiny capillary overgrowths would have yielded promptly and with perfect cosmetic result to one or two applications of the monopolar current and would have prevented absolutely the development of the unsightly nevus, which was to grow in the coming months. In many cases the mothers ascribe the lack of appreciation for the necessity of early treatment

to the fact that they were assured by either the doctor or the nurse that these tiny lesions would disappear of their own accord. Routine inspection of all babies three weeks old by the general practitioner, obstetrician or pediatrician, who is appreciative that these are the red danger signals of future nevi, and their prompt and appropriate treatment, would prevent a great deal of the heartache, disfiguration and costly treatment which neglect of these all too common birthmarks entails.

DISCUSSION

CHAIRMAN COOK: The discussion of this paper will be opened by Dr. E. Lawrence Oliver of Boston.

DR. E. LAWRENCE OLIVER: *Mr. Chairman, and fellow members*—I thoroughly agree with Dr. Blaisdell in almost everything that he said. Dr. Blaisdell spoke of the nevi on the neck of the new-born babies, which occur in one-third of the infants, as disappearing with the growth of the child. I feel a great many of these persist, but, because they are covered by hair, are not noticeable. If you examined everybody's head for these, I think you would find a considerable number of them that remain. I have one on the back of my neck, and quite a number of students, I have noticed, have them also. They are not important, are perfectly harmless, and treatment is practically never necessary.

I think the treatment of port-wine marks, is fairly satisfactory with ultraviolet light. I don't mean that we can cure them entirely, it is very rarely that one can get 100 per cent or near 100 per cent improvement, but I think a 50 per cent improvement is very often obtained with ultraviolet light. I can only remember one case where I did get practically 100 per cent result, and that was a port wine nevus on the neck of a young woman of twenty-five. To avoid the checkerboard appearance Dr. Blaisdell mentioned, I use the water-cooled lamp, a short distance from the skin, protecting the normal skin with paper. I use very large doses and give perhaps ten minutes' exposure, a half inch from the skin. Unless the treated area becomes infected, which it very rarely does, I think there is not the slightest danger of scarring.

I think I am one of the persons that Dr. Blaisdell referred to as claiming that many of the larger nevi of the cavernous type disappear spontaneously. I have followed many that had no treatment whatsoever and, although it took a long time, many of them disappeared without a trace. It is my strong belief that this type of nevus is almost never seen in adults. I think Dr. Blaisdell was not referring to this type, which is made up of cavernous vessels, is dome shaped and is easily compressible. I don't mean we should never treat this type of nevus, as cure may be hastened by treatment, but I think we should bear in mind that spontaneous disappearance is not only possible but probable and, therefore we should avoid doing anything that might produce a scar.

CHAIRMAN COOK: The paper is now open for further discussion from the floor.

Question from the floor: I would like to ask Dr. Blaisdell if he has noted any difference in the tendency to develop keloids in treating skin troubles in general, whether by radium or carbon dioxide snow.

DR. BLAISDELL: I think my answer to that would be that we see very few keloids following the treatment of these nevi. The treatment that would produce keloids more than anything else would be the application of acids. I do not think that those should be used. It has been my experience that following the dissection method I have practically never seen keloids. Radium treatment in itself would prevent their appearance. To put it the other way around, we certainly see a great many more keloids following traumatic injury of the skin than we do following the usual traumatic treatment of nevi.

DR. BLAISDELL: Perhaps, getting away from the subject and speaking of keloids, it is my opinion that surgical interference should never be done because keloids will return in still larger form. I have seen that happen repeatedly. Another point of interest in connection with keloids is that a patient who will develop keloids on one area of the body will not necessarily develop the keloid on other parts. Nevertheless it gives you a little shiver to treat lesions by incision when the patient does show keloids in other localities.

Dr. Claude Payzant of Boston then read a paper entitled "The Value of Physical Therapy in Certain Physical Conditions."

CHAIRMAN COOK: As motion pictures are to follow, we will take up the question period first. If there are no questions we will take a short recess while the motion picture machine is being made ready.

(Motion pictures were then shown.)

CHAIRMAN COOK: We will close by calling for the report of the Nominating Committee. The Nominating Committee wishes to report as officers for this Section for the coming year, Dr. William Curtis of Wollaston, Chairman, and Dr. Frank Wheatley of Boston, Secretary.

If there is no objection I will declare the officers elected as read, and if there are no further comments we will now adjourn.

(Section adjourned.)

ARACHNIDISM*

BY A. S. HARGIS, M.D.†

CASES of poisoning from the bite of the "black widow" spider, *Latrodectus mactans,* are of much more common occurrence than is generally believed. This has been brought to our attention in recent years chiefly through papers on this subject by Bogen,[7, 8, 9] Walsh,[1, 2, 3, 4] Blair[5] and others. Only lately has it been possible to impress on the majority of physicians and the more skeptical general public that the bite of so small an insect could produce such severe and so wide a variety of symptoms. The medical world has only of late become "spider conscious," and even more recently through the dramatic accounts published in the newspapers and various journals has the general public become acquainted with this small but dangerous insect. The black widow spider, being so called because she devours the male, has a number of names throughout the country. The more common of these are the "hourglass" spider, the "shoebutton" spider, the "T bar" spider, the "po-ko-moo" spider and the "poison" spider.

HISTORY

From time immemorial, varied and fanciful tales of poisonous spiders and the horrible effects of their bites have been spread by the highly imaginative but unscientific laity. The loathsome and hideous appearance of the insect lends itself greatly to this point of view. Another misconception of the laity is that the larger the spider the more dangerous its bite. The bulk of data on the subject of spider bite has been contributed within the past fifteen years. However, literature is available as far back as 1720, more than 200 years ago.

LIFE HISTORY OF *Latrodectus mactans*

Details regarding the life history of *Latrodectus mactans,* its appearance, habitat, web, feeding habits, and so forth, have been borrowed freely from Blair's article on this subject.

Appearance. The mature female is a coal-black, glossy insect, the body being about one-half inch in length and the slender legs covering a span of from one and one-half to two inches. The abdomen is globose, and on the ventral aspect of the abdomen there is a bright red spot, usually in the shape of an hourglass. The legs, on closer inspection, are covered with fine black hairs. There may be a smaller red spot on the abdomen somewhat nearer the head. The mature male is generally about one-half to two-thirds as large as the female. In addition to the red, ventral, abdominal markings, common to both sexes, the male has a row of orange spots down the midline of the dorsal surface of the abdomen, three orange-yellow stripes on the side of the abdomen and straw-colored bands on its legs. For a more complete detail one should consult Blair's excellent article.

Habitat. The black widow spider is found in varying degrees of plentifulness throughout the temperate and tropical zones of almost the entire world. In these United States they are far more common in the southern half, but have been found from New Hampshire to Florida and from North Carolina to California. The favorite haunts of these spiders are in dark and preferably dry places, such as outhouses, buildings, around old stumps, holes in the ground, old lumber, trash heaps, between roots of trees and beneath rocks. They are more frequently found around human habitations.

Web. The spider's web is quite characteristic and once observed closely is easy to identify again. This, incidentally, is a valuable aid in the eradication of this dangerous pest. The web is composed of irregularly arranged, coarse threads which crisscross at various angles and many different planes. It is usually built within or near a corner or crevice and is rather cone-shaped. The web, despite its irregular construction, is quite strong and will serve to capture and hold insects many times the size of the spider. The web of the male is much weaker than that of the female.

Feeding Habits. When an insect becomes enmeshed in the web, the spider rushes out and soon further entangles its victim with strands of a sticky silk. The spider then approaches its prey, inserts its claws and the venom is thereupon injected. After a few minutes the struggles of its victim cease; it further enmeshes its prey, raises it to a more suitable place on the web, fastens its mouth on the victim and leisurely proceeds to suck the body fluids. These spiders do not require frequent feedings, often going as long as a month without any appreciable ill-effects.

Mating. The actual process of impregnation has not been observed, but is generally believed to occur in the fall or early spring. Reasons given for this are that the mature males are found to be most plentiful in the fall and that many females captured in the fall and kept alone during the winter lay fertile eggs the following spring.

Egg Sac. The eggs are deposited in a globular sac of silk which is usually greyish-white to a light cream color and darkens to a light tan with age. The laying of the eggs and the forma-

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tion of the sac seem to take place at night, as the actual process has not been observed. If well fed, the female spider is capable of laying more than one sac of eggs. The number of eggs varies widely, ranging from less than one hundred to more than six hundred.

Eggs. The eggs are translucent and about one millimeter in diameter. The color varies from a creamy white to a pale mauve. They have a rather hard covering which protects the semifluid contents. They will bounce in a lively manner when dropped and apparently suffer no injury. These tiny eggs are very poisonous. A few drops of a saline emulsion of crushed eggs injected intravenously into a rabbit will kill it within two minutes. This has been demonstrated by Blair.

Development. During the hot summer months about ten to eleven days are usually required for hatching. The small spiders stay in the egg sac until after the first moult which occurs generally in about five days. They become more and more active after the first moult and finally make a small hole in the sac and emerge one by one, spinning a web as they go. If the weather is warm, this usually occurs about twenty-five days after the eggs are laid. After they emerge, the small spiders cluster in their webs and in a few days moult again. By this time their food supply furnished by the egg has been exhausted and they must forage for themselves. Unless more accessible food is available they begin to feed on one another, as the mother makes no effort to provide for them and may feed on them herself. Six moults are required before reaching maturity, the average time being about fifteen days between each, but as long as one month may elapse.

Life Span. The average life span of the female is about one year. The life span of the male is generally less than one year, due usually to the cannibalistic habits of its mate and to its more delicate and less hardy physical structure.

INCIDENCE

In 1926 one hundred and fifty cases of spider bite were on record in the medical literature. Some of these dated as far back as 200 years, but the bulk of them were recorded in the previous decade. The amount of skepticism evinced toward such a definite clinical entity is remarkable, as noted by Bogen at the time of his review. This skepticism is still evident among quite a few practitioners and a larger percentage of the laity, in spite of the numerous and exhaustive works on this subject in the nine years following 1926. Some observers have commented that spider bite is becoming more and more frequent and offer, in support of their statements, the increasing number of cases and also the apparent increase in the number of spiders. Those differing in opinion state that the increasing number of cases are explained by a more thorough knowledge of the condition and by the fact that physicians now are more alert for cases. Also physicians and laymen are better able to recognize the spider because of the many accurate descriptions of the insect in the literature.

Season. Forty-three cases of arachnidism have occurred in this institution from 1924 through 1935. There seems to be a definite seasonal incidence in cases of spider bite. The greater number of cases occurred in the latter part of the summer and the first part of the fall months, corresponding closely to the season when the spiders are most numerous. We have had cases of arachnidism in every month of the year, but the greater number of cases occurred in August and October. The following table gives the seasonal occurrence in our series of cases.

Seasonal Incidence of Spider Bites

	No. Cases		No. Cases
January	1	July	5
February	1	August	8
March	1	September	4
April	3	October	9
May	4	November	4
June	2	December	1
		Total	43

Age and Sex. *Latrodectus mactans* is no respecter of age, sex or color, although by far the majority of our cases were adult males, the ratio being thirty-four males to nine females. Although there is essentially no particular location of choice for the bite, the greater percentage of bites in our series occurred on the genitalia, the genital bites being thirty-one and the extragenital bites being twelve. The most plausible explanation for both the preponderance of cases being males and the site of the bite being on the genitalia is that the spider inhabits the outhouse rather frequently and that the male genitalia are pendulous. Spider bites occur most frequently in adults for the same reason.

Geographic Distribution. It has been declared that there is probably a geographic variation in the toxicity of the bites. Perhaps this is true, as by far the greater number of deaths directly or indirectly attributable to spider bite have originated in California. It is easily conceivable that spider bite, superimposed on some already existing severe pathologic condition, may materially aid in producing death. However, sufficient autopsies and definite clinical data have not yet been collected to establish this as a fact.

ETIOLOGY

Once a definite history has been established, the etiology is obvious. The patient is bitten

by *Latrodectus mactans,* at which time the insect injects the toxin into the body of its victim. There has been some discussion as to just how the toxin acts in the body and where it has its effect. As stated by Gilbert and Stewart,[10] the active principle of the venom has not as yet been isolated, but the consensus seems to be that the toxin directly stimulates the myoneural junction or acts on the nerve endings.

There is no lasting immunity to the bite of *Latrodectus mactans.* Recent work on this subject has shown that serum from a person recently bitten is of questionable value in alleviating symptoms in a patient just bitten. Past experience with this type of therapy has been disappointing, and we await the more recent work of DoAmaral with interest. His excellent results in the field of antivenins for snake bites excite us to greater expectancy in his latest undertaking.

SYMPTOMS

The symptoms in a well-marked case of arachnidism are startling and dramatic. Seldom will we encounter a clinical entity which impresses us more than this condition. More often than not, when first seen by the physician the patient has been bitten several hours and is in intense agony. He may be rolling and tossing about the bed, unable to keep still. He may cry out at times when the pain seems intensified. A number of our patients have been disoriented and only became aware of their surroundings several hours after admission to the hospital. Obviously, a history was out of the question in these cases. The intense pain has been described by various patients as sharp, lancinating, cramping, aching or constricting in character. Many have stated that the pains seem to come and go, varying in intensity, leaving them with short periods of comparative comfort. The pain seems to spread slowly from the site of the bite, keeping pace with the dissemination of the toxin by means of the lymphatic drainage until it is emptied into the general circulation, at which time it seems to spread with much greater rapidity to all the great muscle groups of the body. Many patients bitten will describe the bite as a sharp, stinging sensation somewhat similar to, but more severe than, that administered by the large red ant. The pain in the area of the bite soon disappears, this probably being due to some extent to the overshadowing influence of the greater pain produced by the disseminated toxin elsewhere in the body.

The muscle groups most frequently involved are those of the shoulders, back, abdomen and thighs. However, one must not be entirely dependent upon this, as we have seen patients with only the abdominal muscles involved upon first arriving at the hospital. Later other muscle groups were included. Again we must be careful because the varying number and intensity of symptoms in a case of arachnidism may be influenced by the amount of toxin injected, the personal degree of reaction and the patient's physical condition. In most cases we have observed that the blood pressure has been elevated, but one must remember that some may have been high before the time of the bite and in others a low blood pressure may be caused by shock which is present at some time in the majority of cases.

The personal experience following the bite of *Latrodectus mactans,* as described by Blair, is by far the most excellent and exhaustive I have yet encountered. For a more detailed description of the symptoms one should refer to his paper, to which I have repeatedly turned and from which I have quoted freely.

Many symptoms other than the ones previously mentioned may be present. Some of these are the following: profuse cold perspiration, subnormal temperature, difficult breathing, restlessness, anxiety, nausea, vomiting, anorexia, cyanosis, delirium, prostration and shock, vertigo, acute urinary retention, rapid pulse and many others in the category of acute medical or surgical emergencies.

LABORATORY FINDINGS

Urine. Other than a tendency to retention in a few cases, no abnormal urinary findings were present that could not be attributed to some previously existing condition.

Blood. A moderate degree of polymorphonuclear leukocytosis was present in 51 per cent of our cases. However, some of these cases did not have a blood count made until several hours after admission to the hospital. Other blood findings were normal.

Spinal fluid. As stated by Gilbert and Stewart,[10] the spinal fluid pressure is known to be elevated, but no pathologic findings attributable to spider bite have been found.

DIAGNOSIS

Correct diagnosis is of the utmost importance. Some of the more characteristic points are enumerated below.

History. A history of the bite is extremely important in making a diagnosis of arachnidism. Most frequently the bite is on the genitalia and has been experienced in a privy. A number of the patients have actually seen the spider, and several have brought the spider with them when they came to the hospital.

Distribution and Character of Pain. The pain usually, but not always, spreads slowly from the site of the bite, following the lymphatic drainage until it empties into the general circulation, at which time the spread of the

pain is much more rapid. The full array of symptoms is generally reached within an hour after the bite. The large muscle groups, as the arms, shoulders, back, abdomen, thighs and legs are involved.

Rigidity. There is a marked board-like rigidity of the abdomen, and the intercostal muscles may be so constricted as to interfere with respiration. The contractions of the back muscles may cause stiffness and backache. A marked spasticity of the extremities is noticeable and reflexes are generally hyperactive. The throat muscles may be so constricted as to interfere with, or completely stop, speech or swallowing. The degree of spasticity of the muscles involved seems to vary from time to time, with slight periods of comparative relief.

Tenderness. Marked localized tenderness was at no time observed in any of our patients. Some was present to a slight degree in a few, but compared with the intense pain and rigidity was relatively mild. This, incidentally, is one of the most important aids in a differential diagnosis.

Temperature. The temperature was normal in the greater percentage of our cases.

Perspiration, Restlessness and Anxiety. Profuse perspiration, inability to keep still and anxiety are fairly constant symptoms.

One may be momentarily confused in making a correct diagnosis of spider bite. Some general conditions which must be ruled out are a ruptured or perforated viscus, appendicitis with perforation, tabetic crisis, acute pancreatitis, nephrolithiasis, cholelithiasis and food poisoning. Pleurisy and pneumonia must also be considered. However, a thorough knowledge of these conditions with their individual characteristics plus the usual help of a history will serve to make a correct diagnosis in almost every case.

PROGNOSIS

Compared with the severity of the symptoms, the mortality from spider bite is relatively low. There have been approximately seventeen deaths in more than four hundred cases. However, no autopsies were done and all these may not have been due to a spider bite. The mortality from arachnidism has been given as 2 to 3 per cent.

TREATMENT

The treatment of spider bite has varied widely in the results obtained. A number of different types of therapy have been tried, and the reports have been good, fair and indifferent. So far as we have been able to determine, no one has tried a combination of the most promising remedies. We have devised a standard routine of treatment for spider bite cases entering this hospital, which we believe produces for them a quicker, greater and more lasting degree of comfort. Our method of treatment is as follows:

1. Morphine sulphate, gr. ¼, hypodermically. Repeat frequently, if necessary.
2. Calcium gluconate, 10 cc. of a 10 per cent solution, intramuscularly. Repeat frequently, if necessary.
3. Glucose, 50 cc. of a 50 per cent solution, intravenously. Repeat, if necessary.
4. Hot tub immersion for one hour or more. Repeat, if necessary.
5. Put to bed, cover well and keep warm, preferably with a radiant light.
6. Force fluids and avoid constipation and urinary retention.

SUMMARY

1. More and more cases of arachnidism are being reported yearly. It is a definite clinical entity—not to be lightly taken.

2. Experienced physicians, unless keeping always on the alert for this condition, may confuse the symptoms with those produced by an acute intra-abdominal lesion.

3. Forty-three cases of arachnidism have been admitted to this hospital in the past fifteen years. There have been no fatalities.

4. History of the spider bite and marked generalized muscular rigidity, with little or no tenderness, are the most poignant factors in making a correct diagnosis.

5. Spider bite cases occur most frequently in the latter part of the summer and the early part of fall, in keeping with the period at which the insect seems to be most plentiful.

6. A combination of the different methods of treatment advised by the various authors on this subject has been found to be more beneficial than any one of these procedures.

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OLIVER WENDELL HOLMES: ANATOMIST, AUTOCRAT, POET*

BY ROBERT M. GREEN, M.D.†

ONE hundred years ago, in the spring of 1836, Harvard had the perspicacity to bestow her Doctorate in Medicine on a promising young man, destined to be one of her most eminent alumni, the only distinguished member of an otherwise undistinguished medical class. This young man was Oliver Wendell Holmes, son of Abiel Holmes, minister of the gospel. Abiel Holmes—*absit omen*—was a graduate of Yale, not the first or the last good man who has come to us from our sister university.

Born at Cambridge, Massachusetts, on August 29, 1809, Oliver graduated from Harvard College with the notable class of 1829, whose members he commemorated in a poem on every anniversary from 1852 to 1889. This little known group of class poems, of which perhaps the most celebrated is "The Iron Gate," constitutes a most touching and intimate revelation of Holmes's personal relations with his classmates. Among these was Benjamin Peirce, mathematician and astronomer, whose mind soared to such abstruse heights of pure reason that Emerson applied to him Wordsworth's verse of the skylark, "A privacy of glorious light is thine." Among them also was the modest and retiring future author of "America" of whom Holmes wrote, "Fate tried to conceal him by naming him Smith."

With these and similar comrades Holmes passed his undergraduate days, and, after three years spent in teaching and travel and study of the law, entered Harvard Medical School where he became a pupil of Jackson, Ware, Channing, Jacob Bigelow and the junior Warren, second of that distinguished dynasty. Always intellectual, brilliant and versatile, Holmes showed himself eager and ambitious in medicine. In the year of his graduation, he won the Boylston Medical Prize for an essay on "Intermittent Fever"; and then broke all precedents by winning the prize again in the next two years, after which it was voted that no one should be allowed to win the prize more than twice.

In the Boston Medical Library is a bound copy of these three essays autographed on the title page in Dr. Holmes's precise, old-fashioned hand for presentation to his friend, Dr. Chadwick. In the essay on "Intermittent Fever" there was evidently some confusion, as was natural in the light of existing knowledge, or rather in the darkness of existing ignorance, between malaria, tuberculosis and typhoid; but with this allowance, the work shows amazing perspicacity, vigor of thought and keen grasp of clinical details. In the *Boston Medical and Surgical Journal* of January 31, 1838, I find the following editorial comment upon the volume in question: "From the exhibitions of talent which Dr. Holmes has given in these essays, his future course will be watched with interest. The volume now embodying the three papers, cannot well be dispensed with, because he has become a native author. It is this latter character which gives peculiar value to his writings. The decision of the committee in awarding the prizes to Dr. Holmes, gives an official assent to the excellency of each product, which after years will confirm and strengthen."

Immediately upon graduation Holmes plunged whole-heartedly into the practice and teaching of his profession. He was an early and abundant contributor to medical literature and his essays, both on account of their scientific value and their charm of style, adorn the pages of the early volumes of the *Boston Medical and Surgical Journal*. Among his medical essays dating from this and later periods there is an admirable one, "Of the Physiology of Walking," which might be recommended to students of orthopedics today. The essay on "The Human Body and its Management" is a brief compendium of physiology and hygiene whose basic data are still accurate and commendable. Most famous of Holmes's medical essays is that on the "Contagiousness of Puerperal Fever" which served in large measure to introduce into this community an accurate knowledge of the true nature of obstetric sepsis some time before the work of Pasteur and Lister.

Though a practitioner of general medicine, Dr. Holmes had a lifelong interest in the study and teaching of anatomy. From the time of his graduation he served as a prosector and assistant under Dr. Warren in the Anatomical Department of the Harvard Medical School, and upon the latter's retirement was appointed the first Parkman Professor of Anatomy and Physiology in 1847. His initial lecture to his class in this capacity evidently attracted considerable attention at the time, for, in the *Boston Medical and Surgical Journal* of December 3, 1847, there is the following editorial comment: "The high expectations in regard to the new Professor of Anatomy in the Harvard University have not been disappointed. The daily press of the city has anticipated us in commenting upon his introductory lecture. Little remains for us but to repeat the language of others. Of this pleasure, however, other editors shall not deprive us, namely, of saying that it

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is the best discourse ever delivered in the Medical School of Harvard University. It abounds with bright thoughts and there is a kind of elasticity and vigor running through its pages that refresh the readers. In conclusion, we congratulate Dr. Holmes on the happy success of his first appearance in professorial character at the Medical College."

The story of Dr. Holmes's long connection of thirty-five years with the Anatomical Department is familiar to us all. He was, no doubt, not an eminent anatomist; but he was unquestionably a very great teacher, and by his felicity and clarity of exposition gave to thirty-five classes of students an accurate and fundamental knowledge of the most fundamental of all medical sciences. Nor was Dr. Holmes merely a reiterator of what was already known. His alert mind was always ready to assimilate new things and his introduction of the microscope into the teaching of anatomy may probably be regarded as the beginning of our modern Department of Histology and Embryology. To all who are interested in tracing the history of Dr. Holmes's contributions to the teaching and knowledge of anatomy may be recommended a thorough inspection of the admirable collection of data and memorabilia assembled with the greatest care and enthusiasm by Dr. Frederic T. Lewis and now on exhibition in Building B-2 of the Harvard Medical School during the Harvard Tercentenary.

In the department of gross anatomy we still cherish a few tangible reminders of Dr. Holmes. One is his so-called "star-muscle" preparation presenting, still in well-preserved form, a dissection which, upon the authority of the late Dr. Thomas Dwight, Holmes must have made about eighty-five years ago, showing a fragment of the occiput, the upper cervical vertebrae, the recti capitis postici muscles, majores et minores, and the obliqui capitis, superiores et inferiores. This specimen is still used in routine teaching of first-year anatomy.

We cherish with greater solicitude, and no longer use on account of their fragility, a series of some thirty anatomical drawings in color made by Dr. Holmes for teaching purposes. They show various of the bones and viscera, and there is a particularly admirable series of the ganglia of the autonomic nerve system. For the most part they are not original, but are copies from the illustrations of various standard books. Nevertheless, as an artist, Dr. Holmes had an unmistakable style of his own; and though most of his known drawings are autographed, there are several not signed which it is easy to identify from our collection as his by their resemblances of style and technic.

Dr. Holmes's life-long interest in anatomy was shown also by numerous allusions in his more purely literary works. In "My Hunt after the Captain", describing Dr. Holmes's quest for his son, the late Judge Oliver Wendell Holmes, when the latter was shot through the neck at the Battle of Antietam, there is an amazingly vivid, brief description of the anatomy of the neck. In another of his essays he refers to the sinking feeling of apprehension which one has in the semilunar ganglia under any sudden emergency. And so *passim* through his literary writings are allusions, expressions and references which only the anatomist would have conceived. In our anatomic teaching today we still cherish and use certain of his descriptive phrases which have been handed down through the years by word of mouth: such as his comparison of a sweat-gland with a fairy's intestine; of the mesentery to the frill of an old-fashioned shirt-front; of the fimbriated end of the fallopian tube to the ragged fringe of an old lady's shawl. And his description of the ischial tuberosities as "those interesting prominences whereon man sits to survey the works of creation" is a phrase whose felicity elevates the commonplace to the level of the sublime.

For thirty-five years, then, Oliver Wendell Holmes, as a practitioner of medicine, as a teacher of anatomy and as an essayist of unique genius, ruled medical and literary Boston as a genial autocrat; and it was only upon his retirement in 1882 that he relinquished the medical domain of this autocracy to his intimate colleague and friend, Dr. Henry J. Bigelow. As a man of letters, Holmes "lived to be the last leaf upon the tree," and until his death on October 7, 1894, remained the *genius loci* of the Back Bay.

As the remembrance of Dr. Holmes *in propria persona* lapses into the receding background of the past, I count myself particularly fortunate in being able, personally, to remember him, though I can only say *Virgilium vidi tantum*. When I was a small boy, in the late 80's, and my mother used to take me walking on the Commonwealth Avenue Park, I can remember distinctly that she pointed out to me his quaint, frail figure in frock coat and silk hat and said, "That is Dr. Oliver Wendell Holmes—remember that you have seen a very great man." I saw him several times thereafter. Once in particular, I remember seeing him stopping to look at the *croci* which bloom so early in spring in some of the sunny front yards on Beacon Hill; and I always fancied it was on such an occasion that he must have conceived his felicitous phrase:

"The spendthrift crocus, bursting through the mold,
Naked and shivering with his cup of gold."

I have the good fortune also to have in my possession what may be a unique copy of an unpublished poem by Dr. Holmes, which came to

me among my grandfather's papers. A footnote states that "These verses were read at a medical supper party about the year 1845." There is no indication before which one of the famous medical clubs of Boston this poem may have been delivered. Evidently it was a convivial occasion and the verses present not only their author but his audience, as "Lieber Mählzel" said of the great Beethoven, in an "unbuttoned mood". Remembering that at this time Holmes had not yet received his appointment as professor, there seems in this poem a certain daring which, however, is quite characteristic of his intellectual ability and independence. May I conclude by reading a few selected passages from these authentic but, I think, hitherto unknown verses of Dr. Holmes?

"This evening hour, which grateful memory spares
From evening toil and unrequited cares;
These curling lips, these joy-revealing eyes,
These mirthful tones, re-echoing as they rise;
These friendly pledges on this festive shrine,
The glistening goblet and the flowing wine;
This genial influence which the coldest heart
Warms to receive and opens to impart:—
Mock the poor Art, who does her subjects wrong,
And steals from Pleasure all she wastes in song.
Yet since you ask this feeble hand to strew
Wreaths on the flowers and diamonds on the snow:
Take all it bears, and, if the gift offend,
Condemn the Poet,—spare! oh, spare! the friend!

"Yes, while I speak, some magic wand appears,
Shapes the long past (Oh, say not happier) years.
Ye lawless fancies, yet untaught to know
The charms of reason, or the scourge of woe;
Ye boyish dreams, now melting into air;
Ye virgin forms, alas, no longer fair;
Ye scattered friends, with many a tear resigned,
Once all our own, now mingled with mankind,
Since, save in memory, ye appear no more
In the bright Present, let the Past live o'er.
Still in the heart some lingering spark remains—
You cannot chase it from the shrinking veins.
Grief comes too early, Pleasure ne'er too late.
Snatch the fair blossom whatso'er its date.
If youth still charm thee, mirth is justly thine;
If age has chilled thee,—lo! the generous wine!

"Oh, thoughtless revellers, when you set my task
How little dreamed you of the toil you asked—
How shall I please you? I, a grave young man
Whose fate is drudgery on "the useful plan."
How can I coax you, smooth you, comb you down,
And cheat your frontals of that awful frown?
Portentous scowl! which marks in every age
The blistering, clystering, tooth-extracting sage.
A verse too polished will not stick at all:
The worst back-scratcher is a billiard ball.
A rhyme too rugged would not hit the point.
Its loose legs wriggling in and out of joint.
Shall I be serious, touching, lachrymose,
Mix tears with wine and give you all a dose?
But well-filled stomachs have not room for grief,
For sips and sighs—for porter and roast beef.
Shall I be learned, and with punch and claw
Dig stumps of Greek from every Ancient's jaw?
But who quotes Cuvier when he feasts on snipe,
Or reads Gastritis when his wife cooks tripe?
Not all the wisdom of recorded time
Can change one tidbit to concocted chyme.
Not all the schools from Berkshire to the Nile
Can melt one sausage into milky chyle.
Nor all the Galens since Deucalion's flood
Change lifeless pudding into living blood.

* * * * * *

"Our noble Art, which countless sharks invade,
Some as a science, many as a trade!
In every column quackery has its line;
From every corner stares the doctor's sign;
From every shore the straining vessel tugs
Ill-scented balsams, stomach-turning drugs;
The keels of commerce clear the farthest surge
Lest some old beldam want her morning purge.
The seaman wanders on his venturous route
To turn a baby's stomach inside out.
Rich were the Queen of yon hepatic isle
With half her subjects squander on their bile;
Rich were Van Buren could he pay his bills
With half his people's waste on "Brandreth's Pills,"—
Or with their products fill his farmer's carts
With tare and tred for reproductive parts.

"If one great truth defies the sceptic's scorn,
That truth is this—that children must be born;
If one great maxim man dare not deny,
That maxim is—that mortal man must die.
If long experience be not all a trick,
Who dares to say that mortals can't be sick?
These solemn truths by thinking minds allowed,
Lift the stern reasoner from the vulgar crowd.
From every truth some vast conclusion flows,
Truth is the pump and reason is its nose:
It's handle logic: work it and it brings
Transcendent streams from transcendental springs.

"Heaven surely ordered, on Creation's morn,
This mighty law—that children must be born.
Hence came the science thou dost show so well
With white forefinger, Madame Lachapelle!
Hence came the forceps, hence the screw to pinch
The soul's own viscus down to half an inch.

* * * * * *

"Thus with the entrance of the first-born man
The reign of Science o'er the earth began;
Nurse of his weakness, soother of his woes,
She waits and watches till his sorrows close.
Nor yet she leaves him when the undying mind
Flits from his clay and leaves the frame behind.

"If thou shouldst wonder that mankind must die
Ask the Curator of our Museum, Why?
Were man immortal, who had ever seen
The stomach, colon, kidneys, pancreas, spleen?
Each pickled viscus, every varnished bone,
Seducing scirrhus and attractive stone,
Lost to the world, had never come to grace
Our well-filled phials in their padlocked case.

"Unknown to fame had Morgagni sighed,
And Louis floated down oblivion's tide,
On Brunner's glands no cheering ray had shone,
And Peyer claimed no patches save his own.
Science, untaught her scalpel to employ,
Had seen no ileum since the days of Troy;
And man, the ruler of the storms and tides,
Had groped in ignorance of his own insides.
Thus the same art that caught our earliest breath
Lives with our life and lasts beyond our death.
Man, ever curious, still would seek to save
Some wreck of knowledge from the waiting grave.
Yet, keen-eyed searcher into Nature's laws,
Slight not the suffering while thou recks't the cause.
How poor the solace, when thy patients die,
To tell the mourners *all* the reasons why.
Love linked with knowledge crowns thy angel art,
Gold buys thy science;—Heaven rewards thy heart.

"Between two breaths, what words of anguish lie;
The first short gasp, the last and long-drawn sigh.
Thou who has aided, with coercive thumbs,
The red-legged infant, kicking as it comes;
Thou who has tracked each doubtful lesion home
With probe and scissors, knife and enterotome;
Short is the opening, short the closing scene;
But a long drama fills the stage between.
Nor deem it strange—since every reason flings
Its sun or cloud on life's unguarded springs;
Since song or science, love of fame or truth
All feed like vampires on the brow of youth;
Since the red goblet shakes the hand that grasps,
And hot-cheeked beauty wastes the form she clasps—
One-half mankind should spend their time to make
The pills and draughts the other half must take.
Oh! fertile source of never-failing wealth,
Mysterious Faith! thou alchemist of health!
But for thy wand, how vainly should we strive
To cure the world and keep ourselves alive!

* * * * * *

"Peace to our banquet, let us not prolong
Its dearest moments with my idle song.
This measured tread of ever marching rhyme,
Like clock-work pleases only for a time,
Too long repeated, makes our heart so sick
We cut the weights to stop its tedious click.
Let sweeter strains our opening hearts inspire,
The listening echoes tremble round the lyre.
Dance! Bacchus! Hours of labor come again
To lock the rivets of our loosened chain.
Shine, star of evening, with thy steadiest ray
To guide us homeward on our devious way."

These verses, which present little more than half of the poem, are not only of interest in themselves but are typical of Holmes's qualities as a poet—his humor, his happy phraseology and his occasional sparks of the sublime. Two of the lines particularly deserve comment. That which refers to the brain as "The soul's own viscus" deserves immortality with other of his anatomic phrases; and his reference to the "undying mind" is another example of his abiding belief in the immortality of the Spirit. Son of a clergyman that he was, and Doctor of Medicine though he was, Holmes always maintained an invincible faith in the human soul. It was this which inspired not only his life but what are perhaps his greatest lines at the close of the "Chambered Nautilus":—

"Build thee more stately mansions, O my soul,
As the swift seasons roll;
Leave thy low-vaulted past;
Let each new temple nobler than the last
Shut thee from heaven with a dome more vast
Till thou at length art free,
Leaving thine outworn shell by Time's unresting sea."

ACUTE TRAUMATIC PECTUS EXCAVATUM

BY W. RUSSELL MAC AUSLAND, M.D.,* AND MICHAEL A. TIGHE, M.D.*

FRACTURES of the sternum associated with depression of the bone are showing an increase in frequency due to automobile injuries in which the chest is compressed. In consequence the treatment of this type of fracture is gaining more attention. Operative reduction is usually considered imperative in these cases, but the difficulties attendant upon such correction are well known. A few operators have successfully used simple traction methods to correct malposition in a limited number of cases. It is to point out another successful application of traction in the treatment of acute traumatic pectus excavatum that the following case is reported.

G. D., male, aged 49, received a crushing injury to the chest in an automobile accident. When admitted to the hospital he was in extreme shock. He complained of considerable pain about the chest, and the breathing was labored.

Physical examination showed the sternum to be deeply depressed into the chest cavity. There was marked tenderness over the sternum and over all the ribs on the right side. The chest signs were râles, shallow breathing, and marked cyanosis. The heart sounds were regular. The temperature was 98; the pulse 100 and the respirations 30. In addition to the fracture of the sternum there was a fracture of the inner condyle of the right femur.

Roentgenographic examination showed a fracture of the sternum in its middle segment, with depression at the site of fracture. There was some indication of fracture of the fourth rib in the axillary line on the right side.

Treatment: Five days after the injury when the patient had recovered sufficiently from the original shock, traction was applied by Dr. Tighe and the writer in the following manner. Avertin was used for the anesthetic. Four Steinmann pins, which had previously been bent at one end to form hooks, were caught under the margin of the sternum at the attachments of the ribs, two hooks being placed on each side, one above and one below the site of the fracture. Elastic bands were attached to the rings in the upper ends of the hooks and fastened in turn to a bar. This bar was then attached to the regular Balkan frame equipped with pulleys, and six to seven pounds of weight were added (fig. 1).

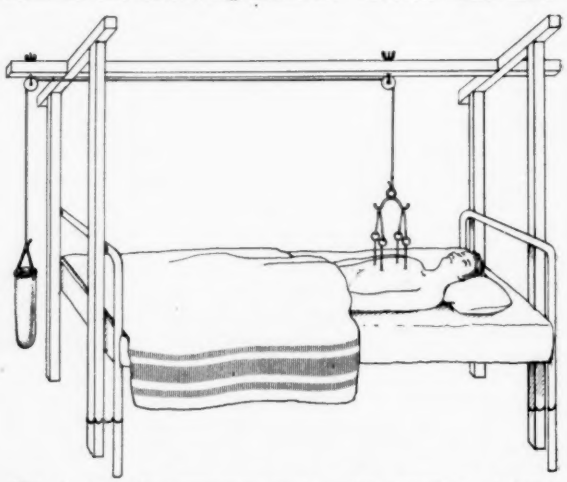

FIG. 1. Traction apparatus used in the treatment of acute traumatic pectus excavatum.

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The relief from labored breathing was immediate, and the return of color striking. During the next two days the patient complained of pain, but it quieted down on the third day. The hooks were left in place for four weeks.

Result: It is now one year since the injury. There has been no recurrence of the pectus excavatum. Union of the fragments is solid, and the sternum is in excellent position.

SUMMARY

Traction has been successfully used in the treatment of a case of acute traumatic pectus excavatum. The apparatus described is simple and can easily be fashioned from regular hospital equipment.

THE VITAMIN C VALUE IN ORANGE AND TOMATO JUICE

Orange juice contains from two to three times as much vitamin C as tomato juice. Either of the juices loses vitamin C if allowed to stand before using. These results were announced by workers in the Bureau of Home Economics, U. S. Department of Agriculture, in an article published on September 5 in the *Journal of Home Economics*. The Bureau points out, however, that when tomato prices are much lower than orange prices, it may be possible to get as much or more vitamin C protection per dollar from tomatoes.

The tests included both chemical analysis and feeding trials of four varieties of oranges, two from California and two from Florida — fresh pressed juice of tomatoes and juice from a brand of commercial canned tomatoes. The juice of the California navel oranges was slightly richer than that of the others but some of the other oranges were enough juicier so that the juice from a fruit of equal size gave as good or better protection. To obtain the same protection from tomato juice it would be necessary to give two or three times as much juice.

The investigators, Esther Peterson Daniel, Mary H. Kennedy, and Hazel E. Munsell, found that the canned tomatoes which they tested contained as much vitamin C as the fresh sample. These tomatoes were grown in different sections of the country and, since there is a loss of vitamin C in canning, these results raise the question of the effect of soil and climate upon the amount of vitamin C formed in the plant.

The common household custom of squeezing orange juice at night to serve at breakfast causes a loss of 10 per cent or more of its vitamin C value, even though it stands covered in a refrigerator. Tomato juice from fresh or canned tomatoes also deteriorates when allowed to stand exposed to the air. This may amount to as much as a 40 per cent loss if the juice stands for several days.—*Bulletin, U. S. Dept. of Agriculture.*

DO YOU KNOW?

The usual period for an increase in infantile paralysis is at hand, but this season so far has not witnessed any sensational outbreak. A few years ago it was impossible to diagnose these cases until there was definite evidence of paralysis. In the light of increased knowledge, it is known today that many cases of this disease may have little more than a sore throat and a stiff neck. The best prevention is to avoid exposure of children to crowds.

Twenty-five years ago this summer mothers everywhere hoped and feared at the mere mention of the dread words: "cholera infantum". Then came public attention to the purity of the milk supply. The record, in New York City, is this: In the summer of 1910, 3,598 children died from cholera infantum: In the summer of 1935 only 166. Had the rate for 1910 prevailed in 1935 nearly 5,000 children would have died.

Dean Carl W. Ackerman said: What would happen to the health of the nation, if research in medicine were directed by and for those who wished to take over the physician's practice for political or economic purposes?

The first medical journal published in the United States appeared August 8, 1797, and was known as the *New York Medical Repository*. It was also the first scientific periodical of any sort to be published in this country.

The first children's clinic was established in 1862 at the New York Medical College under the leadership of Dr. Abraham Jacobi.

The examination of children before they enter school marks a high point in their careers. It has been established time and time again that children in good health make better progress than those who may be hampered by eye trouble, dull hearing or any other unfavorable condition. Prompt discovery and remedying of defects, and timely vaccination against smallpox and protection against diphtheria, may change the whole course of the child's life.

Fifty-nine per cent of the persons in the hospitals of the United States are in institutions for nervous or mental ailments.—Excerpts from the *Bulletin of the New York State Medical Society.*

CASE RECORDS
of the
MASSACHUSETTS GENERAL HOSPITAL

ANTE MORTEM AND POST MORTEM RECORDS AS USED IN WEEKLY CLINICAL-PATHOLOGIC EXERCISES

FOUNDED BY RICHARD C. CABOT, M.D.

TRACY B. MALLORY, M.D., *Editor*

CASE 22371

PRESENTATION OF CASE

First Admission. A forty-one year old Canadian housewife was admitted complaining of indigestion and weakness.

The patient had suffered from a sensation of epigastric fullness and heaviness after meals for about twenty years. Occasionally this was relieved by gaseous eructation but rarely was she compelled to vomit. About four years before entry she felt quite weak and developed ready fatigue. The epigastric discomfort became worse and was associated with pain and vomiting. There was no evidence of hematemesis or melena. She consulted a physician who told her she was anemic and recommended liver extract. She took three vials of this extract daily for a month and improved rapidly. There were no further complaints until six months before entry, when she became quite weak and developed aching pain in the mid-abdomen. This occasionally occurred after meals and sometimes persisted throughout the day. Frequently there was no pain for several days. The discomfort often was relieved by soda and Seidlitz powders and had no effect upon her appetite. She stated that she was always hungry, ate a great deal, but never felt satisfied. Vomiting usually occurred in the morning, was never large in amount, and appeared as clear, green, bitter tasting material. For about four months there were frequent shooting pains in the left loin and two months ago she developed a dragging sensation in the right subcostal region. Throughout her illness, weakness was progressive. There were crawling sensations in her feet and tingling numbness in her fingertips. Palpitation and dyspnea with exertion were prominent.

Physical examination showed a fairly well-developed and nourished middle-aged woman in no discomfort. The sclerae were clear but the skin had a slightly pallid yellowish tint. Oral hygiene was poor and the tongue showed smooth edges but was otherwise negative. The heart was not enlarged but there was a soft blowing systolic murmur in the pulmonic area. The blood pressure was 120/70. The lungs were clear. The liver extended two fingerbreadths beneath the costal margin, but the spleen was not palpable. There was slight tenderness in the epigastrium with deep pressure. The deep reflexes were normal and no impairment of the vibratory sense was elicited.

The temperature, pulse and respirations were normal.

Examination of the urine was negative. The blood showed a red cell count of 7,600,000, with a hemoglobin of 70 per cent. The white cell count was 4,800, 79 per cent polymorphonuclears. There were 1.8 per cent reticulocytes. A gastric analysis showed no free hydrochloric acid after the administration of ergamin. The total acid was 4. All specimens gave a positive reaction to the guaiac test, although a stool specimen gave a negative reaction. A Hinton test was negative.

X-ray examination showed the esophagus and upper stomach to be normal. Occupying the antrum of the stomach and lying beside the valve on the greater curvature side were two filling defects, each measuring 3 centimeters. These had very sharp, smooth borders and the greater curvature in this region was also smooth. Peristalsis began high up in the stomach and proceeded normally down to the filling defects, where it ceased abruptly. Barium, however, could easily be pressed into the duodenum and the duodenal cap and loop were normal. An x-ray of the chest showed several large calcified glands at the right lung root and mediastinum. There were also calcified glands in the left axilla. The lung fields were clear and the heart was normal.

On the fifth hospital day a posterior Polya gastric resection was performed. The pathologic report was polyp. The sections, however, were somewhat atypical, and due to the delay in fixation the autodigestion was too great to allow for a certain diagnosis. The patient responded well postoperatively and was discharged on the nineteenth hospital day.

Final Admission, three and a half years later.

Following her discharge the patient felt very much improved and had no significant symptoms until nine weeks before her re-entry. At that time she noted dull aching pain on either side of her spine in the lower dorsal region. These pains came on only when she reclined at night and were sufficiently severe to disturb her sleep. Six weeks before admission the pain, still aching in character, began to radiate anteriorly along the rib margins bilaterally and occurred during the day as well as night. After four more weeks she developed epigastric discomfort evidenced as a sensation of heaviness associated with malaise. At about the same time jaundice was noted and the stools appeared tarry

in character. She was taking iron medication during this period. The jaundice and epigastric discomfort continued and there was some anorexia but no nausea, vomiting or diarrhea. Her weight diminished about eleven pounds in the last three weeks of her illness. X-ray examination in the Out-Patient Department showed no evidence of metastatic disease of the lumbodorsal spine. A gastrointestinal series showed a normal esophagus and no gastric retention. The gastroenterostomy stoma functioned well and the remainder of the intestinal tract was negative.

Physical examination showed a fairly well developed and nourished, pallid and icteric middle-aged woman in no discomfort. Oral hygiene was poor, and there was patchy smoothness of the tongue. The heart and lungs were negative. The blood pressure was 120/80. The liver edge was smooth, rubbery and extended three fingerbreadths beneath the costal margin. The remainder of the examination was negative.

The temperature was 99.5°, the pulse 75. The respirations were 20.

Examination of the urine showed a specific gravity of 1.022 with a slight trace of albumin and a large amount of bile. The blood showed a red cell count of 4,700,000, with a hemoglobin of 75 per cent. The white cell count was 4,600, 78 per cent polymorphonuclears. Reticulocytes numbered 0.3 per cent. The stools were clay colored and showed no reaction for bile with the bichloride test. Several specimens gave a one plus reaction to the guaiac test. The van den Bergh showed 13 milligrams of bilirubin. The serum cholesterol was 232 milligrams and a fasting blood sugar was 98 milligrams. The Takata-Ara test was negative. The bleeding time was four and a half minutes and the clotting time was thirty-six minutes.

A plain x-ray film of the gallbladder region showed no evidence of stone. Further studies of the gastrointestinal tract showed no significant abnormality.

For a week after entry the patient improved slowly and the bilirubin dropped to 6 milligrams. On the ninth hospital day, however, she had an exacerbation of the epigastric pain and her urine became darker in color. The van den Bergh rose to 10 milligrams. Supportive treatment was instituted and on the twenty-second hospital day a laparotomy was performed.

Differential Diagnosis

Dr. Richard H. Miller: "The patient had suffered from a sensation of epigastric fullness and heaviness after meals for about twenty years." I assume that that has been more or less continuous and steady, and at once one must say it is unusual, and is unlike ulcer, because ulcer would not persist in that way. Occasionally it was relieved by gaseous eructations and occasionally by vomiting; and then four years before she came in she felt weaker, was sicker, and had pain and more vomiting. There was no evidence of blood in the stool or vomitus. The doctor felt that she was anemic. Assuming that this was perhaps some unusual organic lesion, one would nevertheless think that now she had begun to bleed a certain amount. She was improved after taking liver. The trouble, however, continued, and although the discomfort was occasionally relieved by soda and Seidlitz powders, it was not entirely cured.

"She was always hungry, ate a great deal but never was satisfied." That to me is hard to explain. Today we talk more or less about the condition of hyperinsulinism, due to lesions of the pancreas, and associated with excessive need of sugar, but that condition is not characteristic of what we see here.

"She vomited occasionally in the morning and then developed frequent shooting pains in the left loin and later a dragging sensation in the right subcostal region." These symptoms are not particularly characteristic of anything, and I will postpone comment on them for the present.

"Throughout her illness weakness was progressive. There were crawling sensations in her feet and tingling numbness in her fingertips." We noted before that the doctor said she was anemic and with the onset of these nervous manifestations I think one might fairly assume that perhaps she was developing a more definite anemia, whether pernicious, I do not know; but it is suggestive of that.

The physical examination as we run through it briefly is essentially negative.

As to the laboratory work, the blood showed a red cell count of 3,600,000 with a hemoglobin of 70 per cent; a little low, but not a very marked degree of anemia.

The interesting thing is the fact that she had practically no acid in the stomach and yet at the same time she had a positive guaiac test. That makes one suspect she presumably has not an ulcer, because ulcer, almost invariably, is associated with high acidity. One thinks she has not cancer, or she probably would have died long before. Yet here is something that has been going on for twenty years associated with anacidity and blood, and it is pretty difficult to say exactly what it might be. If one did a lot of stomach work one might arrive at a presumptive diagnosis of polyp, as was later found.

The x-ray showed that there were two definite filling defects in the antrum near the pylorus, each 3 mm. in diameter, with sharp smooth borders, and the barium passed into the duodenum. Having arrived at that point it seems to me

that the diagnosis can be made before operation on the basis of anacidity, two filling defects and blood in the gastric content, and polyps of the stomach would fit that perfectly well.

"There were several calcified glands at the right lung root and in the mediastinum." I think they were not related to this condition and were probably old tuberculous lesions, and the same applies to the calcified glands in the left axilla.

The pathologic report was polyp, macroscopically. The specimen was not fixed in time, so there was no microscopic examination. Polyps of the stomach, as I said a moment ago, are associated with bleeding and anacidity. They are usually benign.

Following this operation she was well for a little over three years and came back then, stating that she had been sick for nine weeks. At about that time she began to be jaundiced and although the stools were tarry in character she was taking iron, which might very well have explained it. The jaundice and epigastric discomfort continued. The weight decrease of eleven pounds itself suggests that something very serious was developing.

This recurrence of trouble after three years suggests that something very definite must be going on in the retroperitoneal space around the lower dorsal spine. One is forced to think that perhaps there is some growth which starts out by pressing on the nerves around the vertebral column itself, then on the intercostal nerves, and then perhaps extends enough to press on the common duct. (Demonstrating x-ray film.) I am not good at interpreting x-rays but it would appear that the lower half of the stomach was cut across here and the jejunum was anastomosed to it, and from these x-rays I should judge that the stoma was functioning perfectly normally. One sees clear outlines of the vertebrae, thus ruling out any disease in them.

Physical examination was again essentially negative, except that she was jaundiced and the liver edge was smooth, rubbery, and extended three fingerbreadths below the costal margin. She had been jaundiced quite a number of weeks, the liver was barely palpable four years ago, and I think this enlargement can be perfectly well explained by the backing up of bile into the liver.

We can deduce from the examinations of the urine that the kidneys have now begun to show damage, probably as a result of bile in the blood. There was no anemia at this time. The white count was not remarkable. The reticulocytes were within normal limits. The stools were clay colored and showed no bile. Several specimens of the stool gave a 1 plus guaiac test. I should judge that in any woman with so much jaundice one could assume that there was a little bleeding from minute lesions anywhere in the gastrointestinal tract, and I think that the finding of that amount of blood is not particularly important and does not necessitate a search for any gross lesion.

The van den Bergh finding was distinctly elevated and is again evidence of excessive bile. The normal serum cholesterol varies from 140 to 190 and there have been very complicated findings in regard to cholesterol in cases of liver disease and jaundice, and the reports in the literature have been so contradictory that it is hard to draw any definite conclusion, but in jaundice and in liver damage, cholesterol is usually elevated, so that this simply fits into the picture. I am not familiar with the Takata-Ara test. I know it is a liver function test which is positive in many cases of portal cirrhosis, and this negative result would simply suggest that it was not a case of portal cirrhosis.

After a week in the hospital she improved and on the ninth day had an exacerbation, got worse again, but after a period of days she improved and was explored. I do not believe I would have explored her myself. I think exploration was probably merely a diagnostic procedure.

To go back to the entry four years ago, she had two polyps. Polyps are usually benign but in a certain percentage of cases they do become malignant. In this case the microscopic examination was impossible; therefore, I say that she had adenocarcinoma of these polyps and that, at the time of operation, cancer cells had already migrated into the retroperitoneal space and started a metastatic growth. The operation relieved her for three and a half years, because the actual cause of her symptoms was relieved. But in the meantime the malignant growth was continuing in the retroperitoneal space, and then nine weeks before her second entry the growth had become large enough so that it was pressing on the nerves, and finally, as I said previously, caused obstruction to the common duct. Therefore, in my opinion, she had metastatic adenocarcinoma in the retroperitoneal spaces and that was the cause of her symptoms on her second entry. I am inclined to believe that at the second operation a large mass was found behind the stomach, that nothing could be done, and that she was sewed up, and that if she did not die of peritonitis or what we loosely and perhaps incorrectly call a liver death, she probably died of renal insufficiency that was secondary to bile in the blood and liver insufficiency. She probably died in coma and had convulsions.

Clinical Discussion

Dr. Gerald Blake: On admission to the medical ward this patient had weakness, loss of

weight, anemia and jaundice, and the case seemed to come unquestionably under the head of malignancy, either in the stomach originally, or in the pancreas. She had two things that made us consider the possibility of common duct stone. One was the smooth, rather normal feeling liver and then the remission of the degree of jaundice which occurred about ten days after her entrance; but that rapidly came back to the point at which it was when she came in. Our feeling was that she probably had what Dr. Miller has described, but she might well have a carcinoma of the pancreas. That was based on the pain referred to the back as much as on any other single thing.

Dr. Horace K. Sowles: I saw this woman in consultation, as to whether we would advise surgical procedure. I made a note on the record at that time that I felt the jaundice was probably due to intrahepatic disease and metastatic carcinoma in the liver. I felt that exploration was justified on the basis that the jaundice was probably caused by pressure upon the common duct and that we might be able to relieve the jaundice by doing an anastomosis between the gallbladder and the intestinal tract.

Dr. George A. Leland: I think this case is of considerable interest in many respects. In the first place, if one is going to maintain the diagnosis of recurrent carcinoma of the stomach secondary to malignant polyp, one has a right to assume that the x-ray would show some deformity, and in this case there seemed to be a very nice looking anastomosis between the stomach and the jejunum without any distortion whatsoever. It so happens, however, that cancer recurrence following gastric resections is not always detectable by x-ray. I think the first case in which Dr. Benedict differed from the x-ray department's findings several years ago, in his early experience with gastroscopy was in just such a case as this, where there had been a resection for carcinoma Dr. Benedict was able to detect carcinoma where the x-ray was perfectly negative. We felt very much as did Dr. Sowles, and also as Dr. Miller, that the polyp had been malignant and there was recurrence with pressure on the ducts. We also had in mind the possibility of carcinoma of the pancreas, as Dr. Blake has pointed out, because of this back pain. The pain that follows the rib margins and the back pain that is more severe at night is very apt to originate from pancreatic malignancy.

Exploration was performed with the hope and expectation of doing a cholecysto-anastomosis to relieve her of the jaundice. As you can imagine, there were a great many adhesions in the right upper quadrant, but with considerable dissection a hard mass was found in the vicinity of the stump of the stomach and the head of the pancreas. The common duct was dilated. There was apparently pressure from infiltration of disease up above the cystic duct, so that cholecystenterostomy probably would not have given any relief. It was not apparent from the exploration, up to this point, where the disease had originated, whether it was pancreatic or gastric.

Clinical Diagnosis

Carcinoma of the pancreas.

Dr. Richard H. Miller's Diagnosis

Recurrent adenocarcinoma in the retroperitoneal space, originating in gastric polyps.

Anatomic Diagnoses

Carcinoma of the pancreas with metastases to the regional lymph nodes.
Bile stasis and ? toxic hepatitis of the liver.
Operative wound: Cholecystostomy drainage of the pancreas.
Operative incision: Posterior gastroenterostomy and excision of a gastric polyp.
Peritonitis, acute and chronic, localized, upper abdomen.
Pulmonary atelectasis.
Pulmonary congestion.
Arteriosclerosis, slight aortic.

Pathologic Discussion

Dr. Tracy B. Mallory: This case provides me a useful opportunity to point out one thing. The enthusiasm of the surgeon who first operated in this case to have a photograph taken resulted in the specimen spending three days in the photographic laboratory and reaching us in such an advanced state of decomposition that microscopic examination was out of the question. Decisions as to whether polyps in the stomach are malignant or not are very difficult and often depend on minute cytologic details so that unless the specimens are very fresh they are of practically no use.

The autopsy showed that there was a very large tumor in the head of the pancreas. Our impression was that it was probably primary there. In cases of recurrence of stomach cancers it is not infrequent to have a mass develop in the region of the pancreas but it is generally possible on gross examination to dissect it sufficiently to show that the mass is primarily in the lymph nodes very intimately attached to the pancreas. In this case, although lymph nodes were involved, the main mass was in the pancreas itself. Also, the histologic character of the final specimen is pretty much that of pancreatic cancer, although I do not think that microscopic examination is nearly so important as the gross appearance in deciding between these two.

I think Dr. Miller was probably right in as-

suming that hepatic insufficiency played a major rôle in death. The liver at the time of autopsy was quite small, weighing only 1000 grams. It had been drained through a tube in the gallbladder, I think. Do you know whether it drained adequately, Dr. Leland?

DR. LELAND: I did not have the operative notes here and I forgot about that. A tube was placed in the gallbladder. Cholecystenterostomy was not performed because of pressure on the common duct above the cystic duct. The drain was put in in the hope that by decompressing the gallbladder there might be sufficient diminution of congestion to allow temporary relief.

DR. MALLORY: At any rate the liver had shrunken considerably and showed a very extensive degree of necrosis that was obvious in gross and in the microscopic examination. I think liver insufficiency, plus hemorrhage, probably was the immediate cause of death.

A PHYSICIAN: Was the bone marrow typical of pernicious anemia?

DR. MALLORY: No.

CASE 22372

PRESENTATION OF CASE

A fifty-five year old Canadian electrician was admitted complaining of pain in the left chest.

Eighteen years before coming to the hospital the patient had been gassed while a member of the Canadian army. Since that time he suffered from "bronchitis and asthma", and was under constant supervision of physicians in various hospitals. Three months before entry following a cold the patient had a sharp pain in his left chest near the edge of the sternum which was increased with coughing or deep inspiration. At the same time there was a cough productive of yellowish white material which had neither bad odor nor taste. The cough persisted until entry and five days before admission the sputum was streaked with bright red blood. For about a month the patient had noted a tender lump about the size of a small egg in the left axilla. There was a loss of six pounds in weight during the preceding three months. The appetite was poor and there was frequent sweating. The patient had not worked for eighteen years.

Physical examination showed a thin, pallid, middle-aged man who coughed fairly frequently. Arcus senilis was noted and there was slight ulceration of the right lower gum. There was a firm slightly tender mass attached to the left chest in the left axilla just below the third rib. The mass was noted to be half the size of an egg and was firmly adherent to the surrounding tissues. The left border of the heart was 2 centimeters beyond the midclavicular line and the trachea also appeared to be displaced to the left. The heart sounds were faint but regular and no murmurs were heard. Chest expansion was poor. There was dulness at both bases posteriorly, more on the left, and most pronounced in the left axilla in the region of the mass noted. Coarse bubbling and musical râles were heard at both bases and in the left apical region. At the left base distant bronchovesicular breathing was heard and there was pectoriloquy in the left axilla below the third rib.

The temperature was 99.2°, the pulse 104. The respirations were 24.

Examination of the urine was negative. Several sputa examinations were negative for tubercle bacilli and spirochetes. The material was purulent in character.

X-ray examination showed a large lobulated mass in the lateral portion of the left midchest. There were two main lobulations and lying within each was an area of decreased density without evidence of fluid levels. The outline of the mass was continuous with a similar smaller rounded soft tissue tumor in the axilla and there was a fracture of the sixth and seventh ribs in this region with destruction of the bone about the fractures. It was believed by the roentgenologist that the tumor communicated with a bronchus. One of the pyelograms showed the right kidney to be normal. The left kidney was partially obscured by gas and the pelvis and calices appeared to be somewhat dilated. They showed no evidence of defect in their outline, however. A genito-urinary consultant found no evidence of abnormality of the prostate, urethra or bladder.

The patient continued to cough up about two ounces of frothy blood-streaked sputum daily. At the end of the first week he began to show an irregular rise of temperature up to 102°. The blood showed a red cell count of 5,200,000, with a hemoglobin of 70 per cent. The white cell count was 15,000, 48 per cent polymorphonuclears, 42 lymphocytes, 4 monocytes, 2 basophils, 2 eosinophils and 2 myelocytes. The amount of sputum produced each day gradually increased to about 7 ounces. The patient had considerable pain in the axillary mass and on the fifteenth hospital day an intercostal neurectomy of the left fourth to ninth intercostal nerves was performed. On the following day the patient became cyanotic and appeared dyspneic. He had choking spells accompanied by cough and the production of thin grayish sputum. His condition became progressively worse and he died on the seventeenth hospital day.

DIFFERENTIAL DIAGNOSIS

DR. RICHARD H. SWEET: This man is a fifty-five year old Canadian electrician who had not worked for eighteen years so that his occupation

appears to have no bearing upon the present illness. It seems he was gassed in the war and thereafter had what was described as bronchitis with asthma. I suppose we might assume he had bronchitis which had bothered him all these years. The present illness begins three months before entry with what he described as a "cold". He developed a sharp pain in the left chest near the edge of the sternum, a pleuritic type of pain. When I first read about the appearance of a lump in the left axilla I thought of an empyema which had broken through, the so-called empyema necessitatis, but as we read along in the history we learn that this lump was not fluid.

The physical signs suggest some degree of atelectasis which may have been responsible for the shift in the heart and the trachea. There were signs at both bases which he must have had for many years, with râles and some dulness. The outstanding thing, of course, is the presence of this tumor mass in the axilla with a dull area beneath it—suggesting an area of consolidation. The pectoriloquy may possibly mean some cavity formation.

We have nothing to suggest that he had a lung abscess or that the lesion was secondary to an old infected bronchiectatic lung. It seems like something that has developed recently and independent of the old chronic disease which he has had.

The x-ray examination suggests the presence of a neoplasm. I wondered as I read it if one would be able to see the arc-shaped shadow, which Dr. King has pointed out, and which we have associated with certain cysts and abscess cavities which contain an inspissated type of pus. Here is the axillary mass and we see that the ribs are definitely involved in a tumor, if it is a tumor. It was believed that the tumor communicated with the bronchus. That is an important observation, it seems to me, in making a diagnosis of the type of tumor this man had.

It would seem that we are dealing here with a neoplasm, the important thing being to decide just what type of neoplasm it is. In the first place I think it would be very unusual for a bronchiogenic carcinoma to produce this picture. I have seen them grow through the chest wall, but it is not common. There was definite invasion of the ribs. Although there was some evidence of bronchial obstruction, it does not seem to have been an outstanding finding. On the other hand, a metastatic growth in the lung rarely causes any bleeding, and in fact I think probably almost never does; a fact which must be considered too. If we are dealing with a metastatic growth, the kidneys have been ruled out pretty well as a source. The prostate has been ruled out. We have no indication as to where it might have arisen. The fact that the bone is involved might possibly suggest a primary bone tumor (sarcoma); but there again it would be most unusual for a tumor arising in the ribs to invade the lung and cause bloody sputum. I cannot make a definite diagnosis except that I believe this lesion is neoplastic and probably a carcinoma of the lung invading the chest wall. I think the fact that the axillary tumor is solid and adherent, rather than fluctuant, is important in ruling out an inflammatory process.

Dr. Donald S. King: The lateral film is interesting because it shows the tumor mass apparently at the hilum of the lung, and one would never conclude from studying this film that the tumor was located in the axillary line. We thought at first that we were dealing with a chondrosarcoma starting in the rib, but as Dr. Sweet has pointed out, a chondrosarcoma would not give the bloody and purulent sputum and would not invade the lung as this tumor has done. We have had several cases of chondrosarcoma where the tumor could be removed with the rib and easily separated from the underlying lung.

Clinical Diagnosis

Carcinoma of the lung.

Dr. Richard H. Sweet's Diagnosis

Carcinoma of the lung invading the thoracic wall.

Anatomic Diagnoses

Epidermoid carcinoma of the lung, grade I, with invasion of the pleura, ribs, and thoracic wall.
Pulmonary emphysema, right apex.
Pleuritis, chronic fibrous.
Arteriosclerosis.
Operative wounds: Intercostal neurectomy, biopsy of the chest wall.

Pathologic Discussion

Dr. Tracy B. Mallory: A biopsy, done on the mass just before the intercostal neurectomy, showed an epidermoid carcinoma. At autopsy we found a large cancer mass occupying the major part of the upper lobe of the left lung. The major bronchi were uninvolved, but one of the secondary branches ran directly into the tumor and we thought that it in all probability was the source of the tumor. The bronchial glands were entirely free from metastasis, a surprising finding with such an extensive tumor since the ordinary extension of the bronchial cancer is toward the hilus, with fairly early involvement of the regional glands. In this

case there was no extension to the hilus but a progressive peripheral extension to and through the pleura. It had grown directly through the ribs and was just about to go through the skin at the time of the paient's death.

Microscopic examination of the tumor showed a highly differentiated epidermoid carcinoma. It appeared microscopically to be very slowly growing and could not be graded higher than group I, in the usual four grade system for estimating the malignancy of a tumor. It is incredible that he had had the tumor only three months. I do not believe either that he had had it eighteen years, and the probable interval is somewhere between the two. My guess is that he must have had it for two or three years. There was a great deal of necrosis in the center of the tumor which perhaps accounted for the differences in density in the x-ray shadow. Quite in character with the low grade of malignancy from the microscopic point of view was the fact that we found no distant metastases.

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ERUPTION FOLLOWING THE USE OF CERTAIN CHLORINE COMPOUNDS

THE report of "epidemics" of acneform eruptions in workers coincident with the introduction of some of the newer chlorine compounds into industrial processes has directed attention to a new industrial hazard. At least three groups of such cases have occurred—one of them in Massachusetts with about thirty-five or forty cases. Chlorinated naphthalene and chlorodiphenyl are new chlorine preparations added, under various trade names, to waxes with the idea of lowering the melting point of the compound in order to improve the insulation qualities of cables. These waxes have a relatively low viscosity and a low coefficient of expansion. They are noninflammable and readily impregnate the fabrics used on the cables. They are, therefore, advantageous to industry. The fabric of the cable is impregnated with this melted wax at a relatively high temperature or by immersion in the wax with the addition of some diluent such as carbon tetrachloride or ethylene dichloride. Both the individuals exposed in the manufacture of the cables and the workmen handling the cables in the process of installation come in contact with these substances in solid, liquid, vapor or dust state of the wax. The skin in those persons affected shows comedos and small papules in the earlier stages, and pustules and small cysts later, often ending in some scarring. The face, neck, arms, upper back and thighs are most frequently affected. Numerous cases have shown profuse involvement. Even a child of two and one-half years has been reported with the condition, probably from playing with its father in his work-clothes and sleeping with him. The wife also showed involvement. From two to fifteen months' exposure is apparently required before the appearance of the eruption.

In a recent examination of 100 persons exposed either to the solid, liquid, or vapor state of the wax, 78 per cent were found to be affected to some extent with this dermatitis. In certain of these cases the matter of systemic effects was partially investigated but no definite effects were found. This matter should be further studied, as well as the possibility of throwing some light on the mechanism of adolescent acne.

The occurrence of such an industrial dermatosis with the disfigurement which occurs in these cases and the possible disability which may result demand emphasis. Physicians should be awake to another factor in the production of acne-like eruptions and should participate in efforts to detect these cases early and aid in the necessary preventive measures. It would seem that with the high percentage of involvement some change in the compounds used, or in the method of handling these chlorine compounds, should be adopted. Furthermore, strict preventive measures should be instituted in all occupations in which such compounds are being used with the idea of lessening the opportunity of contact. With the accentuation of already existing acne in young individuals it would be advisable, so far as possible, to employ an older age group of workmen where the greatest exposure occurs. Adequate cleansing facilities, both for skin and clothing, should be initiated, and improved blower systems, and so forth, should be considered as necessary procedures. Perhaps a harmless protective coating could be applied to the cable to protect the handlers of the finished product.

ARTIFICIAL ABORTION

ON November 18, 1920 a decree was issued in Russia permitting artificial abortion for medical and social indications under the following conditions: primigravidae were not to be aborted except for medical reasons unless they insisted

after an explanation of the dangers involved, no woman was to have her pregnancy terminated later than twelve weeks after her last period or earlier than six months following a previous abortion. As time went on, the practical application of the law was that any woman who wanted her pregnancy ended could have it done. Although the Soviet government did not definitely so state, the motive was apparently Neo-Malthusian in that an attempt was made to restrict the population so that it would not exceed the available means of subsistence. Government hospitals, known as *abortaria,* were established where the operation was performed openly by skilled surgeons. In a review of the reasons given by the women for desiring abortion, Karlin[3] found that 41 per cent were in financial distress, while the remainder expressed the desire for economic independence, the wish to participate in political and social life, to enjoy the opportunity for education or to avoid the irksome duties of domesticity. Medical indications appear to have been rare. Aside from poverty, the chief motive seems to have been selfishness. So began an experiment, viewed with interest by physicians and sociologists throughout the world, which is now, after sixteen years, probably to be abandoned, for on May 26 of this year a bill was proposed to make optional abortion illegal and to punish by imprisonment any physician or other person who should terminate pregnancy unless for medical indications. This bill has not yet become a law. It has been offered for public discussion and criticism before final action is taken.[1]

The Soviet government gives as its reasons for this astonishing change of policy an improved conscience among the Russian people and a generally higher cultural and material level. The jaundiced Western eye, however, will look more deeply for the real answer. Those of us who have pictured a high immediate death rate following interference with gestation on so wholesale a scale will find little comfort in the actual facts. Madzuginski[2] in 1933 reported 86,000 artificial abortions in Moscow with no deaths; Karlin[3] records 7,402 and Topuse[4] 14,270, both series without mortality. In 1927 Genss[5] reported 201,480 legalized abortions in all the Russian cities with a death rate of one in twenty thousand. In general, artificial abortion killed practically no patients and the criminal or amateur abortionist, in the cities at least, disappeared from the scene. Moreover, Genss also states that, in spite of the large number of pregnancies that were so ended in the early weeks, the birth rate showed no appreciable fall and still remained among the highest in Europe.

Considerable light on the possible reason for the abandonment of the Russian experiment is thrown by certain articles which have from time to time appeared in the literature. Bublitschenko,[6] in studying 200 women with induced abortions, found that 86 per cent of those up to thirty-five years of age remained sterile and that 57 per cent had chronic pelvic inflammation. Krassilnikian[7] reported that 43 per cent of aborted women had pelvic pathology, while Belgajeva[8] noted that one of every seven women had bleeding, salpingitis or parametritis within ten days after the operation. Other observers found long labors, postpartum hemorrhages and adherence of the placenta in subsequent pregnancies. Since the stay in the *abortaria* was only three or four days, the development of sequelae would not be noted in these institutions, but would come under the observation of the regular gynecologic clinics. It appears, therefore, that although legalized abortion was seldom fatal, it left in its wake a considerable amount of wreckage.

The number of criminal abortions occurring each year in the United States can only be surmised. In Taussig's[9] excellent book on abortion, he places the probable total number of all, spontaneous, therapeutic and illegal, as about 681,000. He believes that 60 to 65 per cent are criminal. If we take a mean of 62.5 per cent we arrive at 425,625 criminal abortions as a purely hypothetical figure. In the opinion of the same authority there are between 8,000 and 10,000 deaths each year, almost all following criminal operations. Not all illegal abortions are performed by physicians; midwives, trained nurses, the patient herself, or her friends and well-wishers may have been guilty. Without holding any brief for the professional, it is evident to all that he does less harm than the amateur, who without regard for asepsis uses the catheter, slippery elm stick, crochet needle, hairpin, buttonhook or, in fact, almost any appropriate article that may be found about the house.

Attempts to punish the criminal abortionist are seldom fruitful unless the woman accuses him by an antemortem statement, and not always then. If she does not die, it is almost impossible to make her testify. In some states she is regarded as a *particeps criminis* and her own testimony will convict her. Moreover, the average jury sees little sin in the destruction of a fetus before the mother has felt it move and finds it difficult to regard it as a living individual, although all biologic knowledge is to the contrary. In line with the same so-called reasoning is the common law, which, as interpreted in many states, holds it not a crime to provoke an abortion before the date of quickening. The only practical aid in the solution to the question of criminal abortion in the United States is a more general knowledge and application of contraception. In this way alone can the appallingly large number of deaths be reduced.

While the physician, who, in good faith, performs a therapeutic abortion to save the life or preserve the health of a patient is happily safe from prosecution in this country, the statutory law in many states is far from clear. In Massachusetts unlawful abortion is a crime, but lawful abortion is not defined. In New Hampshire there are no qualifications, although in Maine, Rhode Island and Connecticut the uterus may be emptied legally to save the life of the mother. The ideal law, as suggested by Taussig, if uniformly adopted throughout the country, would clarify this puzzling situation. It provides that therapeutic abortions may be performed only by registered physicians, in licensed hospitals and in consultation with another physician. The operation is permitted only to save the mother's life or to preserve her health, or in cases of physical depletion or of moral irresponsibility. Such a law should satisfy all reasonable persons who are free from bias and who sincerely believe it their duty to protect the welfare of their patients.

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6. Bublitschenko, L. I.: Monatschr. f. Geburtsh. u. Gynäk. **96**: 183, 1934.
7. Krassilnikian, S.: Russische Erfahrungen mit der Freigabe der Abtreibung, Berlin: E. Ebering, 1930.
8. Belgajeva, S. and Golubein: Ginek. i. Akuscherstvo. **6**:300, 1927.
9. Taussig, F. J.: Abortion. St. Louis: C. V. Mosby Co. 1936.

THIS WEEK'S ISSUE

CONTAINS articles by the following named authors:

HARRISON, TINSLEY R. A.B., M.D. Johns Hopkins University School of Medicine 1922. Instructor in Medicine, Vanderbilt University Hospital, 1925-26. Assistant Professor of Medicine, Vanderbilt University 1929-32. Associate Professor of Medicine, Vanderbilt University, 1932-. His subject is The Pathogenesis of Circulatory Failure. Page 479. Address: 403 Wilson Blvd. South, Nashville, Tenn.

VAN ALLEN, HARVEY W. M.D. Albany Medical College 1891. Chancellor, American College of Radiology. His subject is The Limitations of the Roentgen Method of Diagnosis. Page 482. Address: 19 Maple Street, Springfield, Mass.

BLAISDELL, J. HARPER. A.B., M.D. Harvard University Medical School, 1911. Member of the American Dermatological Association and the American Board of Dermatology and Syphilology. Secretary, New England Dermatological Society. Consulting Dermatologist at the Winchester, Melrose and Haverhill Hospitals. His subject is Vascular Nevi and Their Treatment. Page 485. Address: 45 Bay State Road, Boston, Mass.

HARGIS, A. S. B.S., M.D. Tulane University of Louisiana School of Medicine 1934. Interne, Tennessee Coal, Iron and Railroad Hospital, 1935-1936. His subject is Arachnidism. Page 489. Address: Birmingham, Ala. Temporary address: Swainsboro, Ga.

GREEN, ROBERT M. A.B., M.D. Harvard University Medical School 1906. Associate Professor of Applied Anatomy, Harvard University Medical School. Surgeon-in-Chief for Gynecology and Obstetrics, Boston City Hospital. His subject is Oliver Wendell Holmes: Anatomist, Autocrat, Poet. Page 493. Address: 201 Bay State Road, Boston, Mass.

MACAUSLAND, W. RUSSELL. M.D. Harvard University Medical School 1903. Surgeon-in-Chief, Orthopedic Department, Carney Hospital. Consultant, Burbank Hospital; St. John's Hospital, Lowell and Elliot Community Hospital, Keene, N. H. Clinical Professor, Tufts College Medical School. Address: 412 Beacon Street, Boston, Mass. Associated with him is

TIGHE, MICHAEL A. A.B., M.D. Harvard University Medical School 1908. F.A.C.S. Surgeon, St. John's Hospital, Lowell. Address: 9 Central Street, Lowell, Mass. Their subject is Acute Traumatic Pectus Excavatum. Page 496.

MISCELLANY

BUBONIC PLAGUE REPORTED ON THE WEST COAST

Details of a mild case of bubonic plague occurring in an 11 year old lad living in Monterey County, Calif., have been received by the U. S. Public Health Service from Dr. Harlin L. Wynns of the California State Health Department.

This is the third human case of plague reported in the United States thus far this year, one of the others also occurring in California, while the third was near Beaver, Utah.

Plague has been ever-present in the rodent population in California since an outbreak of human plague occurred in San Francisco early in this century. The disease is transmitted from rats or other rodents to human beings by fleas. Plague-infected ground squirrels have been found as far east as Montana and Utah and these animals are a potential source of danger to human beings.

Concerned at the spread of plague among the rodents, the U. S. Public Health Service last year doubled its plague-fighting force on the West Coast, assigning two officers to the work instead of one. The California State Health Department also carries on extensive anti-plague operations.—*Science News Letter*, August 29, 1936.

HEALTH OFFICERS' MONTHLY STATEMENT OF VENEREAL DISEASES REPORTED IN THE NEW ENGLAND STATES

JUNE, 1936

This statement is issued monthly for the information of health officers in order to furnish current data as to the prevalence of the venereal diseases. The following reports were received from State Health Officers. The figures are preliminary and subject to correction. It is hoped that this will stimulate more complete reporting of these diseases. The following figures of conditions in New England are abstracted.

State	Syphilis		Gonorrhea	
	Cases Reported During Month	Monthly Case Rates per 10,000 Population	Cases Reported During Month	Monthly Case Rates per 10,000 Population
Connecticut	224	1.35	146	.88
Maine	30	.37	35	.44
Massachusetts	423	.98	406	.94
New Hampshire	8	.17	12	.26
Rhode Island	106	1.50	39	.55
Vermont	26	.72	26	.72

Treasury Department—U. S. Public Health Service.

POLIOMYELITIS

The outbreak of poliomyelitis that began in Alabama during the early part of July has apparently been confined to that State and adjoining States in the East South Central region. For the four weeks ended August 8, Alabama reported 129 cases; Tennessee, 99; Mississippi, 32, and Kentucky, 11—more than one-half of the total cases occurred in those four States. No other State or region reported more than the usual increase that is expected at this season of the year.

The total number of cases reported for the country as a whole was 515, which was about 35 per cent of that reported for the corresponding period of 1935. In that year an epidemic that started in North Carolina reached its peak in the South Atlantic region during this period and had spread into states along the North Atlantic seaboard.

The summer rise of poliomyelitis in recent years reached its peak about the third week in September. This year each region reported the usual increase in this period over the preceding period, but the figures compare favorably with those for this season in recent years when an epidemic was not in progress.—*Report of the U. S. Public Health Service*, August 28, 1936.

TRUANTS FROM MEDICINE FOUND FAME ELSEWHERE

The gifts of medicine to humanity—conquests of diseases, relief of suffering and prolongation of life—have never been minimized. Yet from early times there have been medical men who, turning aside from their profession, have made outstanding contributions in other than medical fields.

A roster of these medical "truants" was called by Lord Moynihan* of Leeds in the latest Linacre Lecture at Cambridge University, given in memory of one of the earliest and most distinguished of the truants from medicine. In this lecture, now available in book form (Truants; Cambridge University Press), Lord Moynihan refers to some hundred men, trained as physicians, who won distinction as writers, artists, scientists, statesmen, explorers, actors and even athletes.

Among the latter, Lord Moynihan lists the great cricketer, W. G. Grace; Lennard Stokes, outstanding Rugby player, and the lawn tennis player, Joshua Pim, who won four championships.

Most persons will recall that Clemenceau deserted medical practice for politics; that Keats and Goldsmith studied medicine; that Oliver Wendell Holmes carried on simultaneously in medicine and literature, winning fame not only as the author of the Breakfast Table series but also as the first person to point out that puerperal or childbed fever is contagious.

The name of Sir Francis Seymour Haden is well known in the art world but perhaps less well known is the fact that this eminent etcher carried on a large and important medical practice, often making professional rounds with an etching plate in his pocket.

"Sherlock Holmes" owed his methods of solving a mystery to the fact that his creator, Conan Doyle, studied medicine under Joseph Bell, a Scottish surgeon, who impressed on all his pupils the "endless significance of trifles and of small distinctions."

JOHN BULL

The name of John Arbuthnot, physician and wit of the early 18th century, may not be familiar to many 20th century readers, but who does not know John Bull? This famous character and name was probably created when Arbuthnot published *Law in a Bottomless Pit, or the History of John Bull*, Lord Moynihan states.

A physician of the 16th century, William Gilbert, gave the word electricity to the English language, while important additions to knowledge of electricity were made by an Italian physician, Galvani. Copernicus, the founder of modern astronomy, Linnaeus, father of modern scientific botany, Galileo, Robert Boyle — all held medical degrees and are ranked with the other "truants" by Lord Moynihan.

Honor of being the first truant goes to Imhotep, the Egyptian physician of nearly six thousand years ago, who combined with his duties of physician those of being the Pharaoh's chief Lector, Priest, Architect, and Grand Vizier.—*Science News Letter*, August 29, 1936.

*Editorial Note: Reports from the press under date of September 8 are that Lord Moynihan died on September 7.

THE SPRINGFIELD ACADEMY OF MEDICINE

"To furnish postgraduate instruction in the various branches of Medicine."

Meetings second Tuesday evening of each month, Professional Building, 20 Maple Street, Springfield, Massachusetts.

The first meeting of the Academy for the year will be held on Tuesday evening, September 15, at 8:30.

In the presence of the families, friends, members of the Academy and their guests, the Medical Professions Committee for the Observance of the Tercentenary of Springfield will present to the Academy on this occasion a series of six panels done in oil by Miss Harriet Ellis depicting the Doctor from 1636 to 1936.

These panels will be presented as a lasting memorial to a group of twenty-seven colleagues of by-gone days who served Springfield during their lifetimes in a particularly distinguished and outstanding manner.

Dr. George L. Schadt, Chairman, will read for the Committee a short paper entitled "Rewards of Service."

The officers of the Academy hope that each member will feel it not alone a duty but a pleasure to join in the exercises of this occasion.

PLEASE NOTE CHANGE OF DATE

The regular scientific meeting of the Springfield Academy of Medicine will be held on Tuesday evening, September 22, at 8:30 p. m. This meeting will take the place of the meeting which would ordinarily have been held on September 8.

Dr. Vilray Papin Blair, Professor of Clinical Surgery at Washington University School of Medicine, St. Louis, Missouri, will be the guest of the evening. He will read a paper entitled "Injuries of the Bones and Soft Tissues of the Face," illustrated with lantern slides.

Discussion will be opened by Dr. Allen G. Rice, and Dr. Harold H. Cleaveland (D.D.S.). General discussion will follow.

Luncheon will be served after the meeting.

JAMES A. SEAMAN, *Secretary.*

OFFICERS AND COMMITTEES FOR 1936-1937

President—Willard B. Segur.
First Vice-President—Michael W. Harrington.
Second Vice-President—Arthur J. Horrigan.
Secretary—James A. Seaman.
Assistant Secretary—Jerome A. Whitney.
Treasurer—George L. Steele.

Board of Directors—1937, C. F. Lynch and F. Hagler; 1938, L. D. Chapin and J. E. Dwyer; 1939, N. C. Haskell and S. R. Carsley; 1940, W. Goodell and E. A. Knowlton; 1941, G. L. Gabler and F. S. Hopkins.

Board of Censors—F. K. Dutton, 1937; T. S. Bacon, 1938; H. A. Downey, 1939; F. H. Allen, 1940; E. P. Bagg, Jr., 1941.

House Committee — A. J. Horrigan, Chairman; J. A. Seaman, J. M. Gilchrist.

Registry Committee — R. B. Ober, Chairman; F. Hagler, G. B. Corcoran.

Legislative Committee— W. A. R. Chapin, Chairman; A. M. Glickman, R. R. Meunier, L. E. Hathaway, Jr.

Library Committee — F. S. Hopkins, Chairman; J. A. Whitney, G. DeN. Hough, J. A. Seaman, J. L. Smead, B. Rabinovitz.

September 3, 1936.

Editor, *New England Journal of Medicine,*

It occurred to me that possibly you might be interested with reference to the data about the Springfield Academy of Medicine.

As you will note, the Medical Profession's Committee for the Observance of the Tercentenary of Springfield will, on the evening of Tuesday, September 15, present to the Springfield Academy of Medicine the series of six panels done in oil by Miss Harriet Ellis, depicting the development of the Doctor from 1636 to 1936 in Springfield and shown as part of the Hampden District Medical Society's Historical Exhibit at the annual meeting in June. These panels will be presented to the Academy as a permanent memorial to a group of twenty-seven Doctors of by-gone days, who practiced in Springfield and served their City in an outstandingly constructive manner.

The panels are given by the families, friends, hospital staffs and medical societies, and will hang in the main meeting room of the Academy at 20 Maple Street. A bronze plaque 24 x 18 inches upon which will appear the name of each of the twenty-seven doctors is being made. Possibly you might like this list and it is given herewith. You will notice that one woman Doctor is included, namely, Dr. Phebe A. Sprague, who was probably the first woman Doctor to practice in Springfield, certainly one of the very earliest. This list includes family Doctors of the old school, modern Internists, General Surgeons, Specialists in Eye, Ear, Nose and Throat, Neurologists and Dermatologists, and Obstetrician and a Bacteriologist and Pathologist, the latter establishing in Springfield in 1898 one of the earliest clinical Laboratories in this Country.

The program herewith will give you the other details of the meeting. It is purposed to hold a complimentary dinner for our guests before the meeting. In behalf of the Committee, and as its Chairman, may I tell you that all will be welcome who find it convenient and possible to attend.

Cordially yours,

GEORGE L. SCHADT, M.D.

44 Chestnut Street,
Springfield, Mass.

LIST OF NAMES ON BRONZE PLAQUE

Dr. Everett A. Bates
Dr. Theodore F. Breck
Dr. W. Wallace Broga
Dr. Daniel J. Brown
Dr. Marshall Calkins
Dr. Dudley Carleton
Dr. John H. Carmichael
Dr. Frederick W. Chapin
Dr. Arthur M. Clapp
Dr. David Clark

Dr. Luke Corcoran
Dr. Herbert C. Emerson
Dr. Joseph T. Herrick
Dr. Charles P. Hooker
Dr. Daniel E. Keefe
Dr. Philip Kilroy
Dr. Sanford Lawton
Dr. Edward J. Mahoney
Dr. Alexander S. McClean
Dr. George C. McClean
Dr. John Morgan
Dr. William H. Pomeroy
Dr. Louis A. Préfontaine
Dr. George Rhoads
Dr. Walter A. Smith
Dr. Phebe A. Sprague
Dr. George D. Weston.

THE CAMP TRANSPARENT WOMAN

The Camp Transparent Woman was unveiled in New York, August 20, 1936, in the private preview room of The New York Museum of Science and Industry in Rockefeller Center by Dr. Dean De Witt Lewis, famous Surgeon-in-Chief of Johns Hopkins Hospital, Baltimore, Md., before a distinguished gathering of noted scientists, leading medical authorities and prominent public health officials.

Dr. Roy Chapman Andrews, Director, American Museum of Natural History, New York, was also a speaker on this program which was nationally broadcast.

The exhibit was brought to America, and is lent to the museum through the generosity of S. H. Camp, widely known manufacturer of physiological supports of Jackson, Mich., as his contribution to public health education in America.

The figure is constructed entirely of a transparent material making every organ, even the delicately designated veins and circulatory system, clearly visible to the observer as though he were possessed of x-ray eyes. It is now on public exhibition in the Main Hall of The New York Museum of Science and Industry for a brief period prior to a nationwide public health educational tour of 100 cities which is expected to last more than two years. It will be accompanied by a doctor-lecturer who will introduce the exhibit to scientists, the professional and public health officials nationally, and to the general public in a series of lectures to which admission will be free.

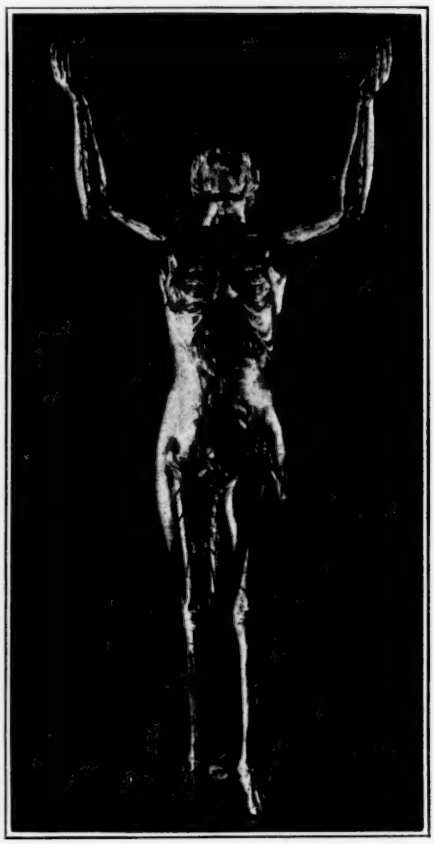
Mr. Camp will donate the transparent figure to some prominent medical school or museum for permanent exhibition at the close of its educational tour during which it is expected to be viewed by several million women.

The Camp Transparent Woman is the first and only one in the world. Its unveiling and preview in The New York Museum of Science and Industry was the first time it had been exhibited anywhere.

Cellhorn, the substance of which the figure is built, was developed by secret process. It is important in that an exhibit of this kind, to be successful, must be impervious to the normal dangers of changing temperature and travel.

Previous attempts made with a "wax" figure were unsuccessful because temperature changes caused the figure to lose its perfect proportions.

The Camp Transparent Woman, however, was not



brought to America to teach the details of anatomy. Rather it is a unique and dramatic public health educational exhibit through which the intricate structure and perfectly functioning mechanism of the female body may be seen as a whole for the first time in human knowledge.

It is the result of twenty years of laboratory research and was achieved through the combined efforts of the wood carvers, electricians, laboratory workers, artists, sculptors, medical authorities and scientists of the Hygiene Museum in Dresden. Actually the present figure took nearly two years in its construction.

The Camp Transparent Woman is exhibited in a heroic pose, arms outstretched above the head. Ethnologically it might be described as a universal Caucasian type of approximately 30 years of age.

The figure stands on a gleaming round silver mounting in the center of the opaque glass-covered interior of an octagonal walnut wood base. Inside the glass interior are 121 lamps which light up the figure indirectly after each demonstration. Inside the figure itself are 20 sets of two lamps each which light up each organ in sequence while the exhibit is

being demonstrated. These lamps were specially constructed for the exhibit and are only 4 volts each. Thus while the figure is amply lighted for demonstration it will not become overheated. The lamps in the interior of the figure are shaped according to the contour of each organ. As each is illuminated, its name is automatically flashed on a glass label on the side of the base. These are in duplicate for the convenience of onlookers.

During its demonstration the brain, from which the skull cap is removed, is first illuminated; then the larynx, thyroid gland, lungs, heart, etc., follow in turn. At the close, the whole figure stands forth in natural colors fully illuminated from the base. The exhibit, which is ingenious in more ways than one, may also be demonstrated manually so that the doctor demonstrating it may light up any organ, or any number of organs at the same time. The figure operates on its own motor.

In constructing The Camp Transparent Woman, a series of photographs were first made of normal organs. The negatives of these photographs were then projected on a screen, and from their giant enlargement a series of drawings were made by the artists co-operating in the figure's construction.

These drawings are the basis of the sculptors' work in making the moulds for the various parts. During this phase of the exhibit's construction the most detailed supervision was maintained by the medical authorities in the museum, so that each organ and artery is scientifically accurate in color, size and dimension. After the various sections had been fabricated from cellhorn, a model of the entire figure was made.

The model is actually a life-size figure in plaster of Paris, based on the scientific measurements of the skeleton, bones, and major organs. From this model the complete cellhorn skin silhouette was moulded.

The Camp Transparent Woman will recall the Transparent Man to the scientific world of America. The first Transparent Man was brought from the same source by Drs. Carl and Robert Mayo of the Mayo Clinic, Rochester, Minn., where it is now on permanent exhibition. It aroused the widespread interest of the medical and scientific worlds when temporarily displayed in The Hall of Science at The Century of Progress Exposition, Chicago. The educational authorities of that city arranged for three hundred thousand school children to see the Transparent Man during the last month of its exhibition there.

Only three other Transparent Men have been constructed. One is in the Hall of Man at The Buffalo Museum of Science. Another was secured for the Swedish Red Cross Museum in Stockholm. The third is in the Hygiene Museum in Dresden.

The Camp Transparent Woman, however, is the only one in existence.

To scientists and the medical world, The Camp Transparent Woman represents a triumph in the history of anatomical study throughout the world.

Among those present at the preview were John L. Rice, M.D., Commissioner of Health, City of New York; Eben J. Carey, D.Sc., M.D., Dean, School of Medicine, Marquette University, Milwaukee, Wis.; Paul B. Brooks, M.D., Deputy Commissioner, New York State Department of Health, Albany, N. Y.; Burt R. Rickards, S.B., Director of Public Health Education, State Department of Health, Albany, N. Y.; J. Lynn Mahaffey, M.D., Director, New Jersey State Department of Health, Trenton, N. J.; William K. Gregory, M.D., Curator of Comparative Anatomy, American Museum of Natural History, New York; Hans Christian Adamson, Assistant to the President, American Museum of Natural History, New York; Mr. William Faunce, Vice-Director, American Museum of Natural History, New York; Louis I. Dublin, Vice-President, Metropolitan Life Insurance Company, New York; Donald B. Armstrong, M.D., Vice-President, Metropolitan Life Insurance Company, New York; Cary Eggleston, M.D.; Willis W. Lasher, M.D., F.A.C.S.; Mr. Thomas C. Edwards, Executive Officer, National Health Council, New York; Dr. Alexander Lesser, Department of Anthropology, Columbia University; William F. Snow, M.D., General Director, American Social Hygiene Association; Kendall Emerson, M.D., Managing Director, National Tuberculosis Association; Reginald Atwater, M.D., Executive Secretary, American Public Health Association; Samuel Gitlow, M.D.; Frank Kiernan, Director, New York Tuberculosis and Health Association; Charles S. Prest, M.D., Secretary, Brooklyn Tuberculosis and Health Association; Homer Wickenden, General Director; Eleanore Conover, M.D., Director of Hospital Information; Maxwell Hahn, Director of Public Education, United Hospital Fund of New York; W. M. Brien, M.D., Health Officer, Orange, N. J.; F. K. Benton, M.D., Medical Director, Western Union Company and many others. — *Excerpts from the Statements of Lawrence Fertig & Company, Inc.*

CORRESPONDENCE

ARTICLES ACCEPTED BY THE AMERICAN MEDICAL ASSOCIATION COUNCIL ON PHARMACY AND CHEMISTRY

535 North Dearborn Street, Chicago, Illinois,
September 1, 1936.

Managing Editor,
The New England Journal of Medicine,

In addition to the articles enumerated in our letter of August 4 the following have been accepted:

Jensen-Salsbery Laboratories, Inc.

Botulinus Antitoxin (Human) (containing 2500 units each of Type A and Type B Antitoxin)

Sharp & Dohme, Inc.

Grass Mixture Pollen Extract (Timothy, June, Orchard, Sweet Vernal, and Rep Top Grass Pollens) and Grass Mixture Pollen Extracts (Pollens of Southwestern Grasses)

Antipneumococcic Serum Types I and II Combined
Nonproprietary Articles
Tetrachlorethylene

Yours truly,
PAUL NICHOLAS LEECH, *Secretary*,
Council on Pharmacy and Chemistry.

RECENT DEATHS

TUHOLSKI—DAVID BENJAMIN TUHOLSKI, M.D., of 34 Woodside Avenue, Brockton, Massachusetts, died August 31, 1936.

Dr. Tuholski was born in Erie, Pa., in 1880, graduated from the Pennsylvania State College in 1903 and from the University of Pennsylvania School of Medicine in 1907. He took postgraduate courses in his Medical Alma Mater and was awarded a degree of Bachelor of Science for research work in biology.

After serving in the Howard Hospital in Philadelphia for two years, he moved to Brockton in 1909. He served as health officer in 1924 and 1925, and again from 1932 until the time of his death.

As president of the Brockton Tuberculosis Association and a past president of the Plymouth County Medical Society, he was prominent in medical affairs in that district. Dr. Tuholski was a Fellow of the Massachusetts Medical Society and the American Medical Association.

In 1913 he married Mildred Burnette Chase. His widow and a son, David B. Tuholski, survive him.

HAYES—JUSTIN GIDEON HAYES, M.D., of Williamsburg, Mass., died in the Cooley Dickinson Hospital, Northampton, Mass., on June 18, 1936, after a long illness. Dr. Hayes was born in Farmington, New Hampshire, in 1849, and graduated from Dartmouth College in 1873 and the University of New York Medical School in 1881. He was a fellow of the Massachusetts Medical Society and had practiced in Williamsburg, Mass., for the past forty-four years. He is survived by one son, Justin E. Hayes, M.D., of Northampton, Mass.

NOTICES

UNITED STATES CIVIL SERVICE EXAMINATIONS

Medical Officer, $3,800 a Year
Associate Medical Officer, $3,200 a Year
Assistant Medical Officer, $2,600 a Year

Applications must be on file with the United States Civil Service Commission at Washington, D. C., not later than September 15, 1936.

The paragraph on Education, which appears in original announcement 91, is amended to read as follows:

"Education—Except for the substitution provided below, they must have been graduated from a medical school of recognized standing with the degree of M.D. For the associate and assistant grades, such graduation must have been not more than 4 years, and for the full grade not more than 20 years, prior to the date of making oath to the application, provided, that where an applicant for the full grade was graduated more than 20 years prior to such date, but during the 20-year period has pursued a postgraduate course of systematic institutional work amounting to not less than 1 school year of 9 months in the particular optional branch for which he applies, his application will be accepted."

The closing date for receipt of applications has been changed to September 15, 1936.

MEDICO-MILITARY INACTIVE DUTY TRAINING, MAYO FOUNDATION

Omaha, Nebraska,
August 12, 1936.

To: Medical Department Reserve Officers.

1. The eighth annual training course for Medical Department Reservists of the Army and Navy will be held at the Mayo Foundation, Rochester, Minnesota, from October 4 to 17, 1936.

2. This training course was first inaugurated by the Seventh Corps Area at the request of the Mayo Foundation to give training in military medicine to the younger medical men connected with the Foundation. Other reserve officers requested permission to enroll and to take advantage of the opportunity to attend clinical presentations during the morning hours. Such permission was granted and such attendance has become so increasingly popular that it is now necessary to limit the enrollment.

3. The program will follow the plan of the past years. The morning hours will be devoted entirely to professional work in special clinics and study groups. Officers in attendance may select the course they wish to follow from the wide variety of presentations offered. The afternoons and evenings will be devoted to a medico-military program under the direction of the Surgeon of the Seventh Corps Area (Army) and the Surgeon of the Ninth Naval District (Navy).

4. This training is on an inactive duty status and is without expense to the Government. Enrollment is open to all Army and Navy reservists of the Medical Departments in good standing. Application should be submitted to the Surgeon of the Seventh Corps Area, Omaha, Nebraska, or the Surgeon, Ninth Naval District, Great Lakes, Illinois. Enrollment is limited to two hundred.

5. The Surgeons General of the Army, Navy, and Public Health Service have signified their desire to attend at least a portion of the course.

Headquarters Seventh Corps Area
Office of the Surgeon
Surg 353 OR (Mayo Foundation) JRH 4000

KENT NELSON, *Colonel*,
Medical Corps, Surgeon.

CORRECTION

The address of Dr. Robert J. Joplin which appeared in This Week's Issue (New Eng. J. Med. 215: 303 [Aug. 13] 1936) was incorrectly given. It should have read 372 Marlboro Street, Boston, Mass.

REMOVALS

BERNARD I. GOLDBERG, M.D., announces the removal of his office to 481 Beacon Street, Boston.

WILLIAM E. LADD, M.D., announces the removal of his office to The Children's Hospital, 300 Longwood Avenue, Boston, Third Floor, The Bader Building. Telephone: Aspinwall 5930.

SOCIETY MEETINGS, CONGRESSES AND CONFERENCES

CALENDAR OF BOSTON DISTRICT FOR THE WEEK BEGINNING MONDAY, SEPTEMBER 14, 1936

Wednesday, September 16—

†12 m. Clinico-Pathological Conference. Children's Hospital.

Saturday, September 19—

*10 a. m. - 12 m. Staff Rounds at the Peter Bent Brigham Hospital. Conducted by Dr. Henry A. Christian.

*Open to the medical profession.
†Open to Fellows of the Massachusetts Medical Society.

September 10-June 24—Pentucket Association of Physicians. See page 474, issue of September 3.

September 14 and 15—Tercentenary Session of the Harvard Medical School. See page 1166, issue of June 4, and page 473, issue of September 3.

September 16-21—First International Congress of Sanatoria and Private Nursing Homes. See page 803, issue of April 16, and page 264, issue of August 6.

September 22, 23, 24—Twelfth Clinical Congress of the Connecticut State Medical Society. See page 217, issue of July 30.

October 4-17—Medico-Military Inactive Duty Training, Mayo Foundation. See page 512.

October 12-18—Third International Congress on Malaria. See page 1076, issue of May 21.

October 19-23—Clinical Congress of the American College of Surgeons. See page 180, issue of January 23.

October 19-31—1936 Graduate Fortnight of the New York Academy of Medicine. See page 1221, issue of June 11.

October 20-22—Academy of Physical Medicine, Annual Meeting, Hotel Statler, Boston.

October 20-23—The American Public Health Association. See page 1226, issue of June 11.

December 3-5—Annual Conference of the National Society for the Prevention of Blindness, Columbus, Ohio.

March 30 - April 2, 1937—First International Conference on Fever Therapy. Postponement notice. See page 52, issue of July 2.

April 21-24, 1937—American Society for Experimental Pathology. See page 1075, issue of May 21.

DISTRICT MEDICAL SOCIETIES

FRANKLIN DISTRICT MEDICAL SOCIETY

Will meet at the Weldon in Greenfield at 11 a. m. the second Tuesdays of November, January, March and May.

CHARLES MOLINE, M.D., Secretary.

MIDDLESEX EAST DISTRICT MEDICAL SOCIETY

October 7—Bear Hill Golf Club, Stoneham.
November 18—Bear Hill Golf Club, Stoneham.
January 13, 1937—Bear Hill Golf Club, Stoneham.
March 16, 1937—Danvers State Hospital, Danvers.
May 11, 1937—Bear Hill Golf Club, Stoneham.

KENNETH L. MACLACHLAN, M.D., Secretary.
1 Bellevue Avenue, Melrose.

PLYMOUTH DISTRICT MEDICAL SOCIETY

October 15—11 a. m. at the Moore Hospital, Brockton.

FRED F. WEINER, M.D., Secretary.
231 Main Street, Brockton.

WORCESTER DISTRICT MEDICAL SOCIETY

September 23—At the Milford Hospital, Milford, Mass. 4:30 p. m.: Visitation of the Milford Hospital unit, which has been recently refinished and added to. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Scientific program and business session. The speakers for this meeting will be Dr. Richard Miller and Dr. Cadis Phipps of Boston, who will give a symposium on Peptic Ulcer, with Dr. Miller discussing the surgical aspects and Dr. Phipps the medical aspects of this condition.

October 14—Rutland State Sanatorium, Rutland, Mass. 6:15 p. m.: Dinner—complimentary by the State Hospital. 7:30 p. m.: Business session and scientific program. Speakers and subjects to be announced in a later issue of the Journal.

November 5—At 4:30, in the rooms of the Worcester Medical Library, Inc., at 34 Elm Street, Worcester, will be held the fall Censors' meeting.

November 11—Grafton State Hospital, North Grafton, Mass. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Business session and scientific program.

December 9—St. Vincent Hospital, Worcester, Mass. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Business session and scientific program.

January 13, 1937—Worcester City Hospital, Worcester, Mass. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Business session and scientific program.

February 10, 1937—Worcester State Hospital, Worcester, Mass. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Business session and scientific program.

March 10, 1937—The Memorial Hospital, Worcester, Mass. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Business session and scientific program.

April 14, 1937—Worcester Hahnemann Hospital, Worcester, Mass. 6:15 p. m.: Dinner—complimentary by the hospital. 7:30 p. m.: Business session and scientific program.

May 6, 1937—At 4:30 in the rooms of the Worcester Medical Library, Inc., at 34 Elm Street, Worcester, will be held the spring meeting of the Board of Censors.

Wednesday Afternoon and Evening, May 12, 1937—Annual Meeting. Time and place for this meeting will be announced in an early spring issue of the Journal.

ERWIN C. MILLER, M.D., Secretary.
27 Elm Street, Worcester.

BOOKS RECEIVED FOR REVIEW

Cystoscopy and Urography. Jas. B. Macalpine. Second Edition. 478 pp. Baltimore: William Wood & Company. $9.00.

Williams Obstetrics. Henricus J. Stander. Seventh Edition. 1269 pp. New York and London: D. Appleton-Century Company. $10.00.

A Manual of Practical Obstetrics. O'Donel Browne. 363 pp. Baltimore: William Wood & Company. $6.50.

Physician, Pastor and Patient. George W. Jacoby. 390 pp. New York and London: Paul B. Hoeber, Inc. $3.50.

Symptoms and Signs in Clinical Medicine. E. Noble Chamberlain. With a Chapter on The Examination of Sick Children by Norman B. Capon. 424 pp. Baltimore: William Wood & Company. $8.00.

Maladies de la Nutrition. F. Rathery. 173 pp. Paris: Masson et Cie, Éditeurs. 22 fr.

Facts About Commercially Canned Foods. 34 pp. New York: American Can Company.

Theory and Practice of Psychiatry. William S. Sadler. 1231 pp. St. Louis: The C. V. Mosby Company. $10.00.

Surgical Diseases and Injuries of the Genito-Urinary Organs. Sir John Thomson-Walker. Second Edition. Edited by Kenneth Walker. 974 pp. Baltimore: William Wood & Company. $10.00.

The Thyroid. E. P. Sloan. 475 pp. Springfield and Baltimore: Charles C Thomas. $10.00.

An Index of Treatment. By various writers. Edited by Robert Hutchison. Eleventh Edition. 1020 pp. Baltimore: William Wood & Company. $12.00.

The Anaemias. Janet M. Vaughan. With Notes on Normal and Pathological Erythropoiesis by Hubert M. Turnbull. Second Edition. 309 pp. London: Oxford University Press. $4.50.

Applied Physiology. Samson Wright. Sixth Edition. 686 pp. New York: Oxford University Press. $6.00.

BOOK REVIEWS

Studies from The Rockefeller Institute for Medical Research. Reprints. Volume 96. 637 pp. New York: The Rockefeller Institute for Medical Research.

One of the most interesting reports presented in this volume is that by Rous and Beard, dealing with the progression to carcinoma of virus-induced rabbit papillomas, the Shope virus being used. Of interest also in the study of virus diseases is the report of Rivers and Ward on smallpox vaccination by means of intradermal injections of vaccine virus grown in minced chick embryo tissue and Tyrode's solution.

From the department of the hospital are presented a series of studies by Van Slyke and his collaborators on the renal excretion of various substances.

The studies on sprue by Rhoads and his collaborators are continued.

Of marked scientific interest are further studies by Stanley on the nature of the virus of tobacco mosaic.

Researches Published from the Wards and Laboratories of the London Hospital During 1935. London: H. K. Lewis & Co., Ltd. 7s. 6d.

These collected reprints from the London Hospital uphold the standard set by previous issues of a similar nature and illustrate the fine type of work being done at this ancient institution. A wide variety of subjects is thus brought to the attention of the readers of this volume and an estimation of the progress in medicine in one of the great hospitals of the world can be obtained. Space is not available to give a detailed list of all the timely subjects here set forth. Particular attention, however, should be called to the work carried on at the London Hospital on human psittacosis, clinical and pathological studies on pituitary tumors and their secretions, occupational argyria, internal hydrocephalus in spina bifida, and the treatment of saccular aneurysm of the thoracic aorta.

The Patient and the Weather. Volume I. Part 2. William F. Petersen, and Margaret E. Milliken. 781 pp. Ann Arbor: Edwards Brothers, Inc. $9.00.

The first section of this volume was reviewed in the *Journal* for June 18, 1936. Part 1, which was largely introductory, outlined the main thesis. The author is attempting to correlate weather conditions with human pathology. Thus a broad point of view is assumed. The present volume, Part 2, deals largely with the correlation between the atmospheric environment and normal individuals. The reactions of four young men, students, have been very completely analyzed in this large volume. The author goes into great detail in regard to all the usual laboratory tests found in a modern hospital. All four individuals were essentially normal, but there were phases in their metabolism and chemistry which, apparently, coincided with certain general trends in the weather. The author, therefore, speaks of the human organism as a "cosmic resonator". The book is filled with charts and diagrams, and references to the literature are placed at the end of each chapter. The whole project is monumental and most difficult to evaluate. In previous volumes the author's style was so obscure that it was often impossible to grasp his meaning. In this he has greatly improved and we are now at least able to understand in large part what forms the basis of his labors. He believes, moreover, that many of the facts which he now presents in a modern scientific manner were already known and accepted by the Greek physicians of Hippocrates' time. He contends, therefore, that bacteriology has drawn us away from the more general observations, particularly in relation to disease conditions and the environment. All biological reactions change with the weather. Perhaps this is illustrated best by observations on the blood pressure and much of the material in this volume relates to such data. The volume, therefore, will be of great interest to physiologists as well as clinicians. With a distinct improvement in style, the author should have a larger and more appreciative audience.

Syphilis and Its Treatment. William A. Hinton. 321 pp. New York: The Macmillan Company. $3.50.

This book very satisfactorily fills a real need, for our ideas in regard to syphilis have gone through some changes in the last few years and considerable crystallization, and the only books containing these new ideas are most excellent but clearly written primarily for the specialist. Hinton has carefully avoided controversial matters and has simplified the whole problem so that it really fits the group for which it is intended, i.e., the student, the general practitioner, and the social worker. Technical terms have been omitted as far as possible without sacrifice of clarity.

The author's training as a pathologist has led him to question some of the traditions of syphilis and to re-express them so as to fit the known underlying pathology.

The reviewer cannot resist the temptation to pay a tribute to the modesty of the author as shown in his delicate handling of the marked advantages of the test of which the author is the originator and which bears his name.

The book is highly recommended to be owned and read by all who treat syphilis.

The Normal Diet and Healthful Living. W. D. Sansum, R. A. Hare, and Ruth Bowden. 243 pp. New York: The Macmillan Company. $2.00.

A revision of the "Normal Diet," written by Dr. Sansum a few years ago, this book contains besides many points on healthful living, and is a welcome addition to the literature on nutrition. This is especially so, since the joint authors discuss freely, frankly, and from a modern point of view, some of the common disorders of the body. The explanation and discussion of the subjects at the end of the book are especially illuminating. As an example, in a chapter on the "Elimination of Wastes," constipation is considered from the standpoint of the form of the feces and the intestinal rate. Then in one on "A Survey of Methods of Treatment," the following sentence serves to illustrate the progressive point of view: "The future holds more promise of progress by teaching and informing men so that they can care for themselves than by centering our (physicians') attention on restoring health when it has been lost." Perhaps an ultraprogressive standpoint is taken in the one on "Indigestion," since the juices of the fruits containing citric acid are recommended for a reduced acidity of the gastric contents, when the exact acid in the form of dilute hydrochloric acid is so readily administered. The subjects treated in the beginning of the book are similar to many others, inasmuch as the components, and the digestion and absorption of food are described. Then, in the appendix, some tables, menus, and articles for suggested reading are listed. Besides being of use to lay readers, for whom it was especially intended, the book should be of interest also to dietitians and physicians.

Collected Papers of The Mayo Clinic and The Mayo Foundation. Volume 27. Edited by Richard M. Hewitt, Lloyd G. Potter, and A. B. Nevling. 1353 pp. Philadelphia and London: W. B. Saunders Company. $12.00.

The current number of the collected papers, like its predecessor, is designed in such a way that it will be particularly attractive to the general practitioner. This purpose is accomplished by printing in full those articles that have clinical value of wide usefulness and from the remaining merely giving abstracts and titles.

One need only peruse this volume to see what an immense clinical laboratory is contained in the Mayo Clinic and how effectively it is used to evolve principles in diagnosis and treatment. As one penetrates beyond the surface, one finds an excellent work by the editors in composing a broad review of recent advances in medicine. Far from being encyclopedic, the volume gives such delightful gems as a discussion of history in thyroid surgery by Pemberton, reminiscences in a similar vein by C. H. Mayo and a most readable discussion of splenomegaly by the Mayo brothers. Then there are statistical studies, descriptions of surgical procedure, notes on experimental work, and occasional academic classifications. All of these papers have been printed elsewhere and no bibliography is included, but reference is made to the original article in each case.

If one buys only a few medical books each year certainly this one would be most valuable in keeping one's library up to date with pleasingly readable material.

The Study of Anatomy. Written for the Medical Student. S. E. Whitnall. Third Edition. 113 pp. Baltimore: William Wood & Company. $1.75.

This is the third edition of a small but very remarkable and unusual book, first published in 1933, whose earlier editions had not come to the attention of this reviewer. It is addressed to medical students and is a human and humane document of one who, devoting his life to the teaching of anatomy at Oxford, at Montreal, and at Bristol, has regarded his subject not from the limited standpoint of pure science or of clinical application but as an element in its relation to the many other elements which make up the multiform total of life, knowledge, and spiritual perception. Perhaps no one else except Oliver Wendell Holmes has ever written about anatomy from just this point of view, a point of view like that from which Sir William Osler, Sir Thomas Browne and a few others have written about medicine. The author has obviously a rich background of general culture including not only the sciences, the fine arts, the classics, literature, and history, but those departments of social understanding which are embraced under the classification of the humanities. Naturally, this monograph is not intended to teach anatomy but to suggest to students how anatomy should be studied. It is a stimulative and inspiring work and one wishes that it might be read, marked, and inwardly digested not only by all students but by all teachers of human anatomy for their mutual benefit. Above all, it reveals the author as that essentially rare individual a true scientist, who is at the same time a true humanist.

Passive Vascular Exercises and the Conservative Management of Obliterative Arterial Diseases of the Extremities. Louis G. Herrmann. 288 pp. Philadelphia and London: J. B. Lippincott Company.

This volume covers the subject of peripheral vascular disorders quite well, giving other accepted forms of treatment as well as the Pavaex idea, although the title might lead one to believe that the book is confined to that phase of the subject.

Herrmann and Reid deserve a tremendous amount of credit for their interest in this problem and the final development of a satisfactory mechanical device for the more rapid development of collateral circulation in arterial disease of the extremities. In addition to this new piece of apparatus which is

particularly valuable in acute occlusions such as peripheral embolus and frostbite, these workers have contributed other outstanding work in this field, all of which is contained in this volume.

A very interesting historical account of the development of negative and positive pressure on the extremity is well presented.

Diagnostic Roentgenology. Edited by Ross Golden. 867 pp. New York and Edinburgh: Thomas Nelson & Sons.

This volume is made up of a series of contributions on roentgen diagnosis as follows:

(1) The Roentgen-Ray Diagnosis of Disease of the Skull and Intracranial Contents. Cornelius G. Dyke.

(2) The Roentgen-Ray Examination of the Paranasal Sinuses and the Mastoids. G. W. Grier.

(3) Radiology of the Chest. Coleman B. Rabin.

(4) Clinical Roentgenology of the Cardiovascular System. Hugo Roesler.

(5) The Roentgen-Ray Examination of the Digestive Tract. Ross Golden.

(6) The Roentgen-Ray Diagnosis of Diseases of Bones. Paul C. Hodges, D. B. Phemister, and Alexander Brunschwig.

(7) The Roentgen-Ray Diagnosis of Spinal Cord Tumors. Cornelius G. Dyke.

(8) Roentgenologic Diagnosis of Diseases of the Urinary Tract. Leopold Jaches and Marcy L. Sussman.

(9) Uterotubography. Samuel A. Robins and Albert A. Shapira.

(10) The Use of the Roentgen-Ray in Obstetrics. Howard C. Moloy and Paul C. Swenson.

(11) The Radiology of Fractures. Edward H. Skinner.

The need of a volume covering the field of Roentgen-Ray diagnosis has long been felt. Although a number of such publications have appeared in foreign languages, there are very few written in English. The contributors are outstanding men and their material has been unusually well presented. This book should be of value not only to the specialist in Roentgenology, but also to the practitioner of general medicine.

L'Année Thérapeutique. Médications et Procédés Nouveaux. A. Ravina. 195 pp. Paris: Masson et Cie. 18 fr.

This small book, which resembles in many respects the "Progress" articles which appear from time to time in *The New England Journal of Medicine*, contains a résumé of what the author believes were the outstanding therapeutic contributions appearing during 1935 in French periodicals and in those from other parts of the world. The first part deals with new measures which have been tried or recommended in a varied list of diseases. Included among these is the treatment of eczema with spleen extract, of undescended testes with prolan, of enuresis with sex hormones and of potassium cyanide poisoning by means of intravenous sodium thiosulphate. The second part deals with the practical application in a number of disorders of electrocoagulation, suboccipital puncture and transfusion. The third subdivision is concerned with the consideration of the use of such definite agents as methylene blue, ergosterol, insulin, the iodides, vitamines and snake venom. There is a short but excellent chapter on the untoward reactions that may occur with gold therapy, their prevention and treatment. The book should prove of value to those interested in keeping abreast with medical progress.

Studies from The Rockefeller Institute for Medical Research. Reprints. Volume 97. 621 pp. New York: The Rockefeller Institute for Medical Research.

Among the varied subjects considered in this volume of reprints reflecting the wide activities of the research staff of the Rockefeller Institute are the studies by Sabin and her collaborators on the reaction to waxy substances from tubercle bacilli and from the leprosy bacillus.

Of interest to those aware of the menace to vegetation presented by the Japanese beetle is a report from the department of animal pathology by Glaser and Farrell on field experiments with the nematode parasite of the beetle.

From the department of the hospital are studies on the immunological aspects of the pneumococcus and a group of studies on the plasma lipids by Van Slyke and his associates, establishing values for normal men, and the effect on the values of plasma lipids of age, chronic nephritis, and hypertension.

To select any one paper from the group of widely varied material for comment is difficult and the above references simply show the wide range of interesting data obtained by workers at the Institute.

Allergy of the Nose and Paranasal Sinuses. A Monograph on the Subject of Allergy as Related to Otolaryngology. French K. Hansel. 820 pp. St. Louis: The C. V. Mosby Company.

This monograph brings into one volume the concept of allergy in its ear, nose and throat manifestations. The arrangement is orderly, progressing from the anatomy, physiology, histology and pathology of the paranasal sinuses to the more complex problems of allergy.

The author not only draws from his vast clinical experience but quotes freely from the literature. Each chapter is followed by an extensive bibliography.

This volume fulfills a long-felt need and should acquaint the allergist with some of the problems of the rhinologist as well as acquaint the rhinologist with those of the allergist.